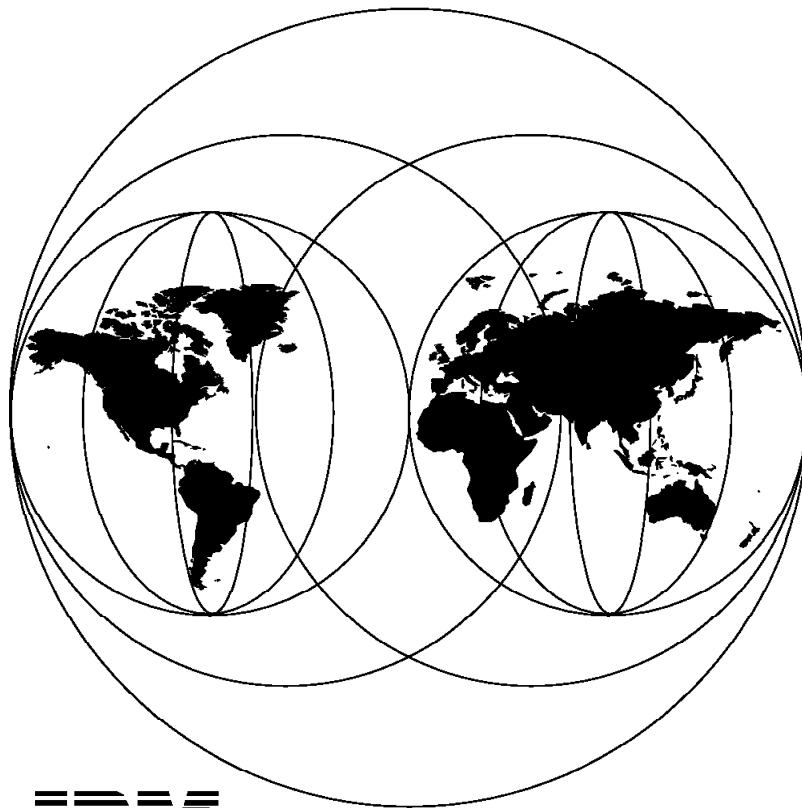


Controlling S/390 CMOS Processors using the Hardware Management Console

November 1996



IBM

**International Technical Support Organization
Boeblingen Center**



International Technical Support Organization

SG24-4832-00

**Controlling S/390 CMOS Processors
using the Hardware Management Console**

November 1996

Take Note!

Before using this information and the product it supports, be sure to read the general information in Appendix B, "Special Notices" on page 191.

First Edition (November 1996)

This edition applies to Licensed Internal Code for HMC driver 66.

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Preface

This redbook provides detailed information on usage and service of the Hardware Management Console (HMC) application with the S/390 CMOS processors. It demonstrates the new dimensions of the hardware service philosophy which could be achieved through the usage of an intelligent workstation and the exploitation of usability functions provided by OS/2.

A major part of this book concentrates on the service of the Hardware Management Console (HMC) and focuses on the individual tasks that might have to be executed by service specialists.

This document is written for service personnel and system administrators. General knowledge of OS/2 and ES/9000 is assumed.

How This Redbook Is Organized

The redbook is organized as follows:

- Chapter 1, "9221 Line of Processors"
Describes the ES/9000 9221 line of processors.
- Chapter 2, "Hardware Management Console (HMC)"
Describes the functions of the Hardware Management Console and the 9221 prerequisites.
- Chapter 3, "Installing, Customizing and Using the Hardware Management Console"
This chapter describes the installation, customization and usage of the Hardware Management Console.
- Chapter 4, "Servicing the Hardware Management Console"
This chapter describes in detail the service of the Hardware Management Console.
It is intended for service personnel only.
- Chapter 5, "Licensed Internal Code Changes"
This chapter describes in detail the Licensed Internal Code maintenance of the Hardware Management Console.
It is intended for service personnel only.
- Appendix A, "Parts List for 9577i Server"
This appendix contains the part list for the 9577i server.

The Team that Wrote this Redbook

This redbook was produced by a team of specialists from around the world working together with members of the International Technical Support Organization Böblingen Center.

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S/390 Product Engineering, Montpellier in France

Comments Welcome

We want our redbooks to be as helpful as possible. Should you have any comments about this or other redbooks, please send us a note at the following address:

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Your comments are important to us!

Chapter 1. 9221 Line of Processors

The 9221 line of processors is a rack mounted platform which runs all current software. It combines the standard attachment via Parallel and ESCON channels with the usage of integrated adapters. The integrated adapters attach to a BUS (the integrated I/O Bus) which is a combination of cards, (the FC5100), enclosures (the FC5010 and FC5020), and microcode.

The integrated I/O Bus (which originates from the ES/9370) offers possibilities to attach several type of adapters.

- Communications adapters

<i>Table 1. Integrated I/O Bus Adapters (Telecommunications)</i>	
Feature	Description
#6120	Basic 3174 (configuration support A)
#625x	BSC, SDLC and HDLC communication lines, speeds up 64Kb
#6250	X.25 TCP/IP
#624x	ASCII attachments
#6135	Ethernet attachments
#6139/6140	Token-Ring attachments

- Using FC6310 also Fixed Block Architecture (FBA) DASD can be attached to the integrated I/O Bus

Examples are:

- 9332 (wdfm)
- 9335 (wdfm)
- 9336-010 (wdfm)
- 9336-020 (wdfm)
- 9336-025
- 9347 1600 BPI tape unit (wdfm)
- The FC6311 can attach the SCSI 9348 6250 BPI tape unit
- Since the integrated I/O Bus is limited to 27 bits, the maximum central storage which can be used is 128MB, the remainder of the installed storage can be used as expanded storage.

Especially on the larger models usage of integrated I/O Bus equipment requires a detailed design of the machine to see whether integrated I/O Bus is the right solution.

- The integrated I/O Bus (code and HW) with its integrated I/O subsystem controllers has been designed intentionally as a low cost alternative to the standard S/390 (S/370) channel without the need of separate control units. On the other hand this may cost somewhat reduced performance and narrower I/O device attachment capabilities (new device types). This should be considered when investing in a new I/O subsystem.

The 9221 can also connect to a Sysplex Timer (9037) but cannot be part of a parallel sysplex since coupling facility links are not provided. The Sysplex Timer attaches via FC6150.

9221 Line of Processors

The ES/9000 9221 line of processors consists of the following models:

<i>Table 2. Available Models</i>					
Model	Processor group	Number of processors	Native S/370	Native ESA/390	LPAR mode
120	18	1	Y	Y (1)	Y (2)
130	25	1	Y	Y (1)	Y (2)
150	28	1	Y	Y (1)	Y (2)
170	29	1	Y	Y (1)	Y (2)
200	30	2	N	Y (1)	Y (2)
191	30	1	N	Y (1)	Y (2)
201	31	1	N	Y (1)	Y (2)
211	32	1	N	Y (1)	Y (2)
221	32	2	N	Y (1)	Y (2)
421	35	2	N	Y (1)	Y (2)
Note: 1. Requires FC9390 2. Requires FC9391					

The models 191, 201, 211, 221 and 421 are considered to be 9221 211 based processors.

1.1 Processor Summary

The following table shows highlights of the different models of the ES/9221 family.

<i>Table 3. ES/9221 Processor Summary</i>							
Model	120 130	150	170	191	200	201 211	221 421
Processor(s)	1	1	1	1	2	1	2
CPU Cycle time	30ns(2)	30ns(2)	27ns	16ns	27ns	16ns	16ns
Integrated Floating Point Processor	Y	Y	Y	Y	Y x 2	Y	Y x 2
(Integrated) System Assist Processor	-	-	-	SAP	Y	SAP	Y
Minimum Processor Storage	16MB	16MB	32MB	64MB	64MB	64MB	128MB
Maximum Processor Storage (1)	256MB	256MB	256MB	512MB	256MB	512MB	512MB
High Speed Cache (per processor)	16KB	16KB	16KB	16KB + 192KB	16KB	16KB + 192KB	16KB + 192KB
Maximum Parallel/ESCON Channels	12	12	24	24	24	24	24
Maximum Integrated I/O Buses	4	6	6	6	6	6	6
Maximum I/O Subsystem Controllers	16	16	16	16	16	16	16
S/370 Base Option	Y	Y	N	N	N	N	N
ESA/390 Option	Y	Y	Y	Y	Y	Y	Y
Note: 1. With any integrated adapters, maximum processor storage is 128MB. The remainder can be used as expanded storage. 2. 35ns with RO1 S/370 base							

A 9221 processor is equipped with a Service Processor (SP) which has the following functions:

- Install and maintain the licensed internal code which allows for (amongst others):
 - Power on Reset (previously called IML) the processor
 - IPL the processor
 - Restart the processor
- Hardware diagnostics for the attached processor and licensed internal code.
- Remote support facility (RSF) to RETAIN.
- Remote Operator Facility (ROF) to operate the complete machine from a remote location.
- NetView alerts to a NetView controlling host.

1.1.1 Service Processors

The Service Processors use PS/PC technology. Especially in the last years the technology has changed very often. You can have a PC700 based service processor which is not in this list.

From the beginning the following Service Processors have been available or are currently still being shipped:

- PS/2 model 8570-121 MCA
 - A 386DX 20 Mhz PS/2 with 6MB of storage
 - A 120MB Hard Disk
 - An internal tape backup unit (ITBU)
 - A multiprotocol adapter for Synchronous Data Link Control (SDLC) connections
 - A 3270 adapter card (FC2000)
 - A Token-Ring adapter card (FC1133)
 - Running licensed internal code based on OS/2 1.3
- PS/2 model 8557-A59 MCA
 - A 386SLC 20 Mhz PS/2 with 8MB of storage
 - A 160MB SCSI Hard Disk
 - An internal tape backup unit (ITBU)
 - A multiprotocol adapter for SDLC connections
 - A 3270 adapter card (FC2000)
 - A Token-Ring adapter card (FC1133)
 - Running licensed internal code based on OS/2 1.3
- PS/2 model 9556-DE9 MCA
 - A 486SLC3 25/75 Mhz PS/2 with 8MB of storage
 - A 170MB SCSI Hard Disk
 - An internal tape backup unit (ITBU)
 - A multiprotocol adapter for SDLC connections
 - A 3270 adapter card (FC2000)
 - A Token-Ring adapter card (FC1133)
 - Running licensed internal code based on OS/2 1.3
- PS/2 model 9577-VTD MCA (RPQ basis only)
 - A 486DX4 33/99 Mhz PS/2 with 24MB of ECC storage
 - A 340MB SCSI Hard Disk
 - An internal tape backup unit (ITBU)
 - A multiprotocol adapter for SDLC connections
 - A 3270 adapter card (FC2000)

9221 Line of Processors

- A Token-Ring adapter card (FC1133)
- Running licensed internal code based on OS/2 3.0 Warp
- PC 730 6875-4V1 ISA/IDE (various models)
 - A Pentium 90 Mhz with 16MB of storage
 - A 540MB IDE Hard Disk
 - An internal tape backup unit (ITBU)
 - A wide area connector card for SDLC connections
 - A 3270 adapter card (FC2000)
 - A Token-Ring adapter card (FC1133)
 - Running licensed internal code based on OS/2 3.0 Warp

The following table shows combinations of 9221 Roll Outs and usable PCs.

<i>Table 4. Supported IBM PC Types for Rollout 0X</i>							
PC	RO1	RO2	RO3	RO5	RO5.5	RO6	RO7
8570	x	x	x	x		x	
8557	x	x	x	x		x	
9556	1	x	x	x		x	
9577							x (2)
PC730					x		x
Note: 1. The 9556 can also be equipped with a DualStor 250 ITBU. This ITBU is not supported with RO1. 2. RPQ S02366 only							

The rest of the document will cover only RO7 since that is the only release of the Internal Code which supports the Hardware Management Console attachment.

1.2 Roll Out 7 Functions

Roll Out 7 adds the following functionality to the Service Processor:

- New versions of the following software:

<i>Table 5. New Levels of Software</i>			
RO1,RO2,RO3,RO5,RO6	Version	RO7	Version
IBM OS/2 Base Operation System Extended Edition	566933601 1.30.1.	IBM OS/2 Base Operation System WARP	562260100 3.00
IBM OS/2 Communications Manager	566933602 1.30	IBM OS/2 Communications Manager/2	562207800 1.11
		IBM OS/2 Lan Adapter and Protocol Support	562125303 2.20.2
		IBM OS/2 Distributed Console Access Facility	562221200 1.30

- Addition of Distributed Console Access Facility (DCAF)
Each PC with the appropriate authorization and the required software can now access the Processor Console. The need for installing the Remote Operator Facility code is eliminated.
- Usage of 7857-017 modem versus 5858-001
The 7857-017 allows for speeds of up to 19.2 Kbps.
- Usage of faster PC hardware for Operator Console
- Attachment possibilities for Hardware Management Console (HMC). Either using RPQ S02364 or to the same HMC where also 9672 or 9674 machines are attached.
- Integration level of RO6 fixes, allowing for faster installation and service.

Chapter 2. Hardware Management Console (HMC)

The Hardware Management Console originates from the first 9672 Parallel Transaction Servers and 9673 Parallel Query Servers. Also the 9674 Coupling Facility uses a Hardware Management Console for central operation. It is now used for the complete line of 967x processors and can also be used with the 9221 211 based processors.

The main functions are:

- Single point of operations for multiple systems
- TCP/IP SNMP agent and Application Programming Interface (API)
- Drag and drop for functions such as IPL, RESET and LOAD
- DCAF (single object operations) to the 9221 console eliminating the need for working near the machine. The 3270 sessions provided with FC2000 can also be used in DCAF mode
- Better interface for console integration
- Message routing

Note: What machines an HMC can control depends on the driver level, for example the driver 66 HMCs can control:

- 9672 P01-P03,
- 9672 E01-E08,
- 9221 191-421,
- 9672 R11-R61,
- 9672 RA2-R72,
- 9672 R53-RX3
- 9674 C01-C03

but **not**

- 2003 all models
- 9672 RA4-RX4
- 9674 C04

2.1 How to Obtain a Hardware Management Console

A customer can obtain a Hardware Management Console in the following ways:

- Order FC0009 and FC6090 with a 967x processor.

At least one Hardware Management Console should be available when a 967x processor is installed at a customer site.

- Request RPQ S02364 which ships the following:
 - PC750 Pentium Processor
 - > 540MB IDE Hard Disk
 - Wide Area Communications (WAC) adapter for SDLC
 - 7857-017 modem
 - ISA Token-Ring adapter (requires the prereq. #1133)
 - ISA 3270 adapter (requires #2000)
 - SCSI adapter with 230MB R/W Optical Drive
 - 20 Inch display

- The licensed internal code for Hardware Management Console

Note: The Licensed Internal Code (LIC) provided is limited to run on one PC or PS/2. You are not allowed to use the LIC on another PC or PS/2.

2.2 Hardware Management Console Prerequisites

The following prerequisites for using a Hardware Management Console with 9221 211 based processors should be fulfilled:

- FC1133 (Token-Ring adapter)
- FC9226 or New Build RO7 with PC700 console
- A Multiple Access Unit (MAU) 8228, 8230 or equivalent
- LIC level E13055 for OS/2 and E25944 for the System (RPQ S02366)
- LIC level E13086 for OS/2 and E25944 for the System (GA)

2.3 Using the Hardware Management Console Windows

This chapter explains the format of Hardware Management Console windows and how to use the keyboard and mouse to select items and enter information on the windows. This is intended only as a general overview; there are additional features which are not covered.

For a description of the console actions and tasks available refer to Table 7 on page 12. For detailed information about using the Hardware Management Console Workplace and other Hardware Management Console windows, refer to the *Hardware Management Console Guide*, GC38-0453.

2.3.1.1 Parts of a Typical Hardware Management Console Window

Figure 1 on page 9 shows the main parts of the Hardware Management Console Workplace.

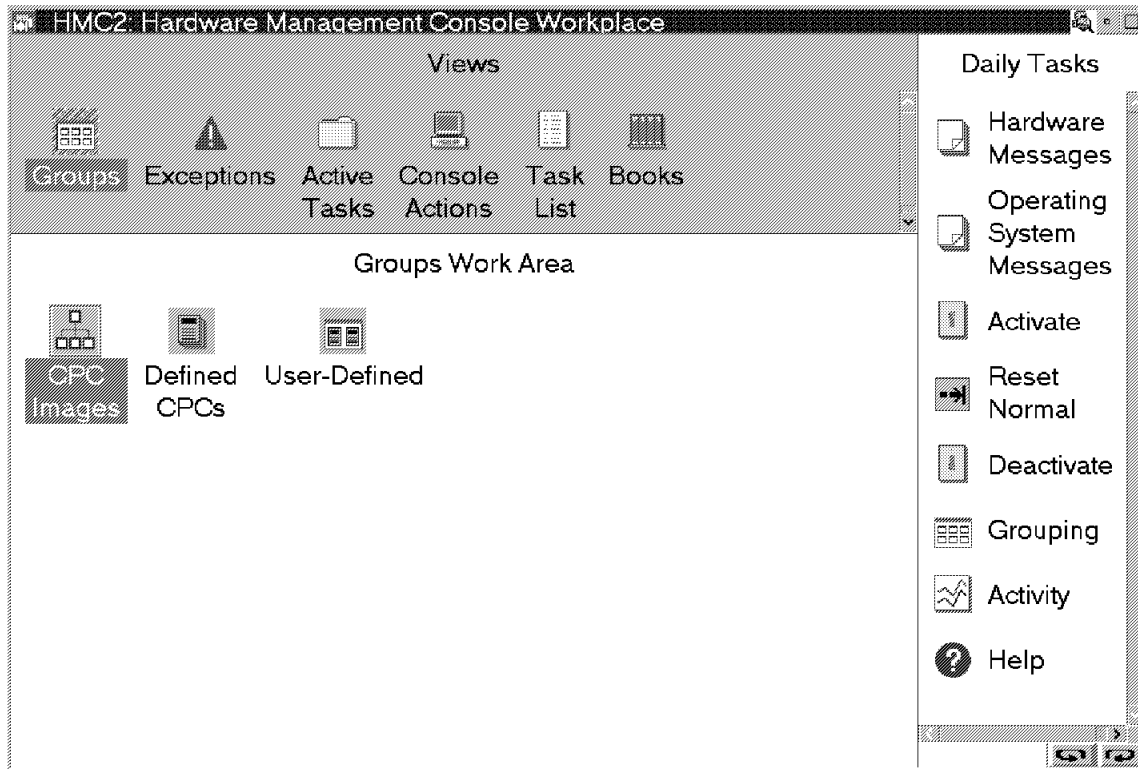


Figure 1. Hardware Management Console Workplace Window

The Hardware Management Console Workplace window consists of three areas:

- Views Area - located on the top of the display; title is Views
- Work Area - located below Views
- Tasks Area - located on the right side

2.3.1.2 Views Area

The Views area contains objects that represent different views of objects that make up your system. The background color of this area also gives an indication of system status.

2.3.1.3 Work Area

This area displays the work area for the view selected from the Views area. Initially, the Groups Work Area is displayed as shown in Figure 1.

2.3.1.4 Tasks Area

Tasks area contains operations that you can perform on system objects. This area displays the task group selected from the Task List Work Area. In Figure 1 Daily Tasks displays.

The tasks available in service mode are described in 2.5, “Hardware Management Console Tasks” on page 11.

2.3.2 Opening Objects

Opening an object displays additional details about the object, if available. For example: opening Defined CPCs in the Groups Work area displays icons for all the CPCs defined for the Hardware Management Console. Opening one of the CPCs displays status and other information for the CPC. To select an object:

- Place the mouse pointer on the object.
- Double-click with the left mouse button.

2.3.3 Selecting Objects

Selecting an object prepares it for further action. To select an object:

- Place the mouse pointer on the object.
- Click once with the left mouse button.

If an object is already selected, clicking on it deselects it.

Some views in the Work area allow you to select multiple objects. Selecting two or more objects allows you to perform tasks on them as a group.

2.3.4 Drag and Drop

You can work with the window using what is known as the drag and drop technique. This uses the mouse to pick up one or more objects, drag them to a task, and then drop them.

To drag and drop an object:

- Place the mouse pointer on the object to be dragged.
- Press and hold down the right mouse button.
- Drag the object over a task in the Tasks area; then release the right button.

2.3.5 Removing the Messages Windows

The Hardware and Operating System Messages windows do not have pushbuttons that you can use to clear them from the display screen. Instead, you have to minimize the windows. You can do this in either of two ways. Either click on the minimize icon (smaller of the two boxes) in the upper right-hand corner, or click on the icon in the upper left-hand corner and select **Minimize** from the pull-down.

2.3.6 Example of Using the Hardware Management Console

Here is an example to help you understand how the Hardware Management Console Workplace is used, what terms are used for the procedures in this manual, and an explanation of how to do the step. The example gives the steps to display hardware messages for a CPC. (The operator would do this when the Hardware Messages icon is flashing to indicate a pending message.)

Note: In this example we are using Service Tasks. This is not actually necessary since Hardware Messages are available from any of the task lists. But this will also show how to open Service Tasks which are used by many of your Hardware Management Console activities.

At the Hardware Management Console:

- Open **Task List** from the **Views** area (point the cursor at the Task List icon and double-click the left-hand mouse button).

- Select **Service Tasks** from the **Task List Work Area** (point the cursor at the Service Tasks icon and click the left-hand mouse button).
- Open **Groups** from the **Views** area (point the cursor at the Groups icon and double-click the left-hand mouse button).
- Open **Defined CPCs** from the **Groups Work Area** area (point the cursor at the Defined CPCs icon and double-click the left-hand mouse button).
- Find the CPC with the colored background (this is the CPC with a pending message).
- Drag the CPC icon and drop it on **Hardware Messages** in **Service Tasks** (point the cursor at the icon, press and hold the right mouse button, move the mouse cursor to Hardware Messages, then release the mouse button).

This displays a window with hardware messages for the selected CPC.

2.4 EC levels for Driver 66

The following EC levels are considered to be driver 66:

<i>Table 6. Driver 66 Levels</i>		
Bus Type	OS/2	System
ISA PC700	E45650	E45552
MCA PS/2 9577 SVGA	E45558	E45552
MCA PS/2 9595 XGA	E45550	E45552

Table 7 on page 12 shows what functions are provided on the Hardware Management Console driver 66 and whether they are supported with the 9221 RO7.

2.5 Hardware Management Console Tasks

Table 7 on page 12 lists the console actions and tasks available at the Hardware Management Console in all user modes. A description of all console actions and tasks available in service mode is provided starting on the following page.

For general information on how to use the Hardware Management Console windows, refer to the 2.3, "Using the Hardware Management Console Windows" on page 8. For information on other Hardware Management Console selections used by the operator, refer to *Hardware Management Console Guide*, GC38-0453.

Note: The Console Actions are related to either the Hardware Management Console or the entire system. The various tasks relate to a group of selected 9221s, or group of selected images.

Table 7 (Page 1 of 4). Tasks on the Hardware Management Console.

Abbreviation	Explanation						
See	<i>References to additional task information (subchapter number)</i>						
Op	<i>Operator</i>						
AO	<i>Advanced Operator</i>						
SP	<i>System Programmer</i>						
CE	<i>Service</i>						
AA	<i>Access Administrator</i>						
Icon / Task	9221	See	Op	AO	SP	CE	AA
Console Actions	Y	2.5.1	X	X	X	X	X
View Console Events	Y	2.5.1.1	X	X	X	X	X
View Console Service History	Y	2.5.1.2	X	X	X	X	X
Save/Restore Customer Console Data	Y	2.5.1.3					X
Customize Console Date/Time	Y (5)	2.5.1.4	X	X	X	X	X
Change Console Internal Code	Y	2.5.1.5		X	X	X	
Analyze Console Internal Code	Y	2.5.1.6				X	
Backup Critical Console Data	Y	2.5.1.7			X	X	
Perform a Console Repair Action	Y	2.5.1.8				X	
View Console Information	Y	2.5.1.9	X	X	X	X	X
Customize Automatic Logon	Y	2.5.1.10					X
View/Update User Profiles	Y (1)	2.5.1.11					X (1)
Customize Product Engineering Access	Y	2.5.1.12					X
Hardware Management Console Settings	Y	2.5.1.13	X	X	X	X	X (2)
Enable Hardware Management Console Services	Y	2.5.1.15			X	X	
Customize Scheduled Operations	Y	2.5.1.16			X	X	
Remote Support Telephone Queue	Y	2.5.1.17	X	X	X	X	X
Transmit Console Service Data	Y	2.5.1.18	X	X	X	X	X
Authorize Internal Code Changes	Y	2.5.1.19			X	X	
Delete Staging Area Files	Y	2.5.1.14			X	X	
Customize Automatic Dialing	Y	2.5.1.20			X	X	
Customize Account Information	Y	2.5.1.21			X	X	
Customize Remote Service	Y	2.5.1.22			X	X	
Customize Problem Management	Y	2.5.1.23			X	X	
Domain Security	Y	2.5.1.24					X
Enable Pager Notification	Y	2.5.1.25			X		
Installation Completion Report	Y	2.5.1.26				X	
Log off	Y	2.5.1.27	X	X	X	X	X
Daily Tasks	Y	2.5.4	X	X	X	X	X
Hardware Messages	Y	2.5.2	X	X	X	X	X
Operating System Messages (3)	Y	2.5.3	X	X	X	X	X
Activate	Y	2.5.4.1	X	X	X	X	
Reset Normal	Y	2.5.4.4	X	X	X	X	
Deactivate	Y	2.5.4.2	X	X	X	X	
Grouping	Y	2.5.4.3			X		

Table 7 (Page 2 of 4). Tasks on the Hardware Management Console.

Abbreviation	Explanation						
See	References to additional task information (subchapter number)						
Op	Operator						
AO	Advanced Operator						
SP	System Programmer						
CE	Service						
AA	Access Administrator						
Icon / Task	9221	See	Op	AO	SP	CE	AA
Activity	Y	2.5.4.5	X	X	X	X	X
CPC Recovery Tasks	Y	2.5.5	X	X	X	X	X
Hardware Messages	Y	2.5.2	X	X	X	X	X
Operating System Messages (3)	Y	2.5.3	X	X	X	X	X
Single Object Operations	Y	2.5.5.1	X	X	X	X	X
Start	Y	2.5.5.2		X	X	X	
Stop	Y	2.5.5.3		X	X	X	
Reset Normal	Y	2.5.5.4	X	X	X	X	
PSW Restart	Y	2.5.5.5		X	X	X	
Reset Clear	Y	2.5.5.6	X	X	X	X	X
Load	Y	2.5.5.7	X	X	X	X	
Service Tasks	(4)	2.5.6	X	X	X	X	X
Hardware Messages	Y	2.5.2		X	X	X	
Operating System Messages (3)	Y	2.5.3		X	X	X	
Service Status	N	2.5.6.1	X	X	X	X	X
Perform Problem Analysis	N	2.5.6.2		X	X	X	
View Service History	N	2.5.6.3		X	X	X	
Backup Critical Data	N	2.5.6.4			X	X	
Hard Disk Restore	N	2.5.6.5				X	
Checkout Tests	N	2.5.6.6				X	
Report a Problem	N	2.5.6.7	X	X	X	X	X
Transmit Service Data	N	2.5.6.8	X	X	X	X	X
Change Management Tasks	(4)	2.5.9	X	X	X	X	X
Hardware Messages	Y	2.5.2	X	X	X	X	X
Operating System Messages (3)	Y	2.5.3	X	X	X	X	X
Engineering Changes (ECs)	N	2.5.9.1			X	X	
CPC EC Details	N	2.5.9.2			X	X	
Retrieve Internal Code	N	2.5.9.3		X	X	X	
Change Internal Code	N	2.5.9.4		X	X	X	
Product Engineering Directed Changes	N	2.5.9.5				X	
System Information	N	2.5.9.6	X	X	X	X	X
CPC Remote Customization Tasks	Y	2.5.7			X	X	
Hardware Messages	Y	2.5.2			X	X	
Operating System Messages (3)	Y	2.5.3			X	X	
Remote Service	Y	2.5.7.1			X	X	
Problem Management	Y	2.5.7.2			X	X	

Table 7 (Page 3 of 4). Tasks on the Hardware Management Console.

Abbreviation	Explanation						
See	References to additional task information (subchapter number)						
Op	Operator						
AO	Advanced Operator						
SP	System Programmer						
CE	Service						
AA	Access Administrator						
Icon / Task	9221	See	Op	AO	SP	CE	AA
Operations Management	Y	2.5.7.3			X	X	
Account Information	Y	2.5.7.4			X	X	
CPC Operational Customization Tasks	Y	2.5.10	X		X	X	X
Hardware Messages	Y	2.5.2	X		X	X	X
Operating System Messages (3)	Y	2.5.3	X		X	X	X
View Activation Profiles	Y	2.5.10.1	X	X	X	X	
Change/Delete Activation Profiles	Y	2.5.10.2			X		
Automatic Activation	Y	2.5.10.3			X		
Scheduled Operations	N	2.5.10.4			X	X	
Customize Date/Time (5)	Y	2.5.10.5	X	X	X	X	X
Object Definition Tasks	Y	2.5.8				X	X
Hardware Messages	Y	2.5.2					X
Operating System Messages (3)	Y	2.5.3					X
Change Object Definition	Y	2.5.8.1				X	X
Add Object Definition	Y	2.5.8.2				X	X
Remove Object Definition	Y	2.5.8.3					X
CPC Configuration Tasks	(4)	2.5.11			X	X	
Hardware Messages	Y	2.5.2			X	X	
Operating System Messages (3)	Y	2.5.3			X	X	
Perform Model Conversions	N	2.5.11.1				X	
Transmit Vital Product Data	N	2.5.11.2			X	X	
View Frame Layout	N	2.5.11.3			X		
Edit Frame Layout	N	2.5.11.4				X	
RPQ Support	N	2.5.11.5				X	
Note: 1. User IDs for Hardware Management Console access only 2. Network + SNMP changes 3. Operating system to initialize message interface 4. Only hardware and operating system messages supported 5. Function cannot be used when attached to Sysplex Timer							

2.5.1 Console Actions

In service mode, the following console actions are displayed in the Work Area when Task List is selected in Views:

- View Console Events
- View Console Service History
- Customize Console Date/Time
- Change Console Internal Code
- Analyze Console Internal Code
- Backup Critical Console Data
- Perform a Console Repair Action
- View Console Information
- Hardware Management Console Settings
- Delete Staging Area Files
- Enable Hardware Management Console Services
- Customize Scheduled Operations
- Remote Support Telephone Queue
- Transmit Console Service Data
- Authorize Internal Code Changes
- Customize Automatic Dialing
- Customize Remote Service
- Customize Problem Management
- Domain Security
- Installation Completion Report
- Log off

2.5.1.1 View Console Events

Allows you to view a record of system events occurring on the system and the Hardware Management Console.

System events that are recorded include logon, power-on, power-off, system resets, and system errors. The events are displayed from the most recent event to the oldest event.

Pull-downs under the View menu bar item allow you to change to a different time range, or to change how the events display in the summary.

2.5.1.2 View Console Service History

Displays problems relating to the Hardware Management Console and all optical channels (ESCON, ESCON converter) on the attached 9221s. The problems may be opened or closed and will be displayed with the most recent log entry at the top of the list.

From the Service History window, you can:

- | | |
|-------------------------------|--|
| Re-display PA windows | Re-displays the Problem Analysis windows that were invoked when the selected problem was originally reported. |
| Show problem summary | Displays detailed information about the selected problem including machine type, model, and serial number information. |
| Close selected problem | Changes the current status of the selected problem to closed. |

Close all problems

Changes the current status of all open problems to closed.

2.5.1.3 Save/Restore Customer Console Data

Allows you to save/restore the data as defined in 3.4, “Customization of the Hardware Management Console” on page 34.

2.5.1.4 Customize Console Date/Time

Allows you to change the time and date of the battery-operated Hardware Management Console clock, and change the time-zone offset from the universal time coordinate (UTC). This function cannot be used when the 9221 is attached to a Sysplex Timer. The battery operated clock of both the 9221 Service Processor (SP) and Hardware Management Console will be coordinated by this Sysplex Timer.

2.5.1.5 Change Console Internal Code

Allows you to retrieve, install, activate, accept, or remove internal code changes for the Hardware Management Console.

Change management services must be enabled to use options that manage the internal code changes stored on the processor console hard disk.

2.5.1.6 Analyze Console Internal Code

Allows you to install, activate, remove, or edit a temporary internal code fix provided by IBM Product Engineering.

2.5.1.7 Backup Critical Console Data

Copies customization and product information that is stored on the Hardware Management Console hard disk to the optical drive. You can not back up the data stored on a 9221 Service Processor (SP) hard disk from the Hardware Management Console.

2.5.1.8 Perform a Console Repair Action

This pull-down selection is the starting point for Hardware Management Console repairs. It provides you with a menu of open call numbers on the Hardware Management Console. Select the open call number on which you were directed to work and follow the instructions on the windows that follow.

2.5.1.9 View Console Information

Displays information about Hardware Management Console machine type, model numbers, serial numbers, and licensed internal code.

2.5.1.10 Customize Automatic Logon

Allows you to automatically log on a specific user when the Hardware Management Console application is started.

2.5.1.11 View/Update User Profiles

Allows you to add and modify user profiles for logon to the Hardware Management Console.

Notes:

1. Adding user IDs has to be done manually on the 9221 Service Processor (SP) if you want to use single object operations to the 9221 Service Processor (SP).
2. Since you can only customize user profiles for the Hardware Management Console itself you will have to coordinate and manually make the changes to the 9221 Service Processor (SP)s.

2.5.1.12 Customize Product Engineering Access

IBM Product Engineering can make use of predefined user ID/password combinations in order to do additional problem determination to your Hardware Management Console. This access is very secure and therefore does not represent a security exposure. We advise you not to disable Product Engineering Access.

2.5.1.13 Hardware Management Console Settings

Allows you to modify the default colors used to show exception conditions on the Hardware Management Console and to change the Local Area Network (LAN) information and SNMP API information (the last two tasks only in Access Administrator mode).

2.5.1.14 Delete Staging Area Files

Allows you to delete Engineering Change (EC) and internal code fix files stored on the Hardware Management Console hard drive to make room for new files. This may be necessary since the area set aside for these files is limited.

2.5.1.15 Enable Hardware Management Console Services

Allows you to enable or disable remote console operations, remote service, and installation of licensed internal code changes from a remote console. Also whether the Hardware Management Console can act as a Phone Server can be set here.

2.5.1.16 Customize Scheduled Operations

Allows you to schedule the time and dates for automatic licensed internal code updates and backup of critical hard disk data.

2.5.1.17 Remote Support Telephone Queue

Allows you to display any activity occurring in the queue for the remote support facility. You can use this selection to prioritize certain information, delete information, or halt the transmission.

2.5.1.18 Transmit Console Service Data

Allows you to send Hardware Management Console dump, trace, or customization information to the IBM Service Support System, or store it on an optical drive or diskette.

2.5.1.19 Authorize Internal Code Changes

Allows you to enable or disable the ability to install and activate licensed internal code changes to the Hardware Management Console.

2.5.1.20 Customize Automatic Dialing

Allows you to enable automatic dialing and provide the prefix and numbers for dialing outside numbers from the account.

2.5.1.21 Customize Account Information

Allows you to customize the Account Information for the Hardware Management Console. Account Information provides a description of the Hardware Management Console which includes its physical location; customer name, address, and telephone numbers; IBM customer, sales branch, service branch, region, and country account numbers.

2.5.1.22 Customize Remote Service

Allows you to enable or disable remote service for the Hardware Management Console. When enabled, service call requests and error information to be analyzed by IBM Support may be sent either automatically (if automatic dialing is enabled) or manually by the operator. If you select to do this automatically you are prompted for the IBM Service Support System and service telephone numbers. When disabled, requests for service and error information must be done through voice communications.

One of the selections, **Authorize automatic service call reporting**, will send error information and requests for service automatically to IBM without operator intervention.

2.5.1.23 Customize Problem Management

Allows you to enable or disable alert generation for Hardware Management Console problems. When enabled, alerts will be sent to a Problem Management focal point at the LAN address or telephone numbers that you specify. An alert will be generated and sent due to any loss of a Hardware Management Console resource.

2.5.1.24 Domain Security

Provides a method for you to maintain the security of a processor complex by controlling the access of the Hardware Management Consoles to the CPC support elements. Hardware Management Consoles can only communicate with 9221 Service Processor (SP)s that have the same domain name as the Hardware Management Console. Assigning a unique domain name to a Hardware Management Console and the 9221 Service Processor (SP)s that are defined to it will isolate those 9221 Service Processor (SP)s from any other Hardware Management Console connected to the same Local Area Network (LAN).

2.5.1.25 Enable Pager Notification

The Hardware Management Console offers a possibility to dial out to a pager in case of problems. This action allows you to set this.

2.5.1.26 Installation Completion Report

Used by service representatives to report installation information. This information is used by Product Engineering to assess the success of the installation and make improvements in the installation processes. The information can be transmitted directly to Product Engineering from the Hardware Management Console or copied to diskette.

2.5.1.27 Log off

Ends the current user session and logs off the Hardware Management Console.

Select this operation when you no longer need access to the Hardware Management Console. After you log off, the Log on the Hardware Management Console window displays.

2.5.2 Hardware Messages

Hardware Messages are available on each of the Tasks Area selections. Use Hardware Messages to display hardware related messages for CPCs, Hardware Management Console, or the “optical network.” The optical network refers to ESCON and ESCON converter channels.

The Hardware Messages icon flashes blue when there are new messages pending. When Defined CPCs are displayed in the work area, the 9221 with a pending message is indicated by a blue background on the CPC icon.

To view the list of pending hardware messages for a 9221, display Defined CPCs in the work area, drag the icon for the 9221 and drop it on the Hardware Messages icon.

The icons for Hardware Management Console and Optical Network display in the Groups Work area only when there are messages pending for them. To view the list of pending hardware messages for a Hardware Management Console or the optical network, display Groups in the work area, drag the icon and drop it on the Hardware Messages icon.

View explanations of a hardware message by selecting the message, selecting Requests from the menu bar, and Details from the pull-down.

Messages are listed from the oldest to the newest message. Only the last one hundred messages are saved.

Some messages are deleted automatically after you view the message details. These messages generally provide information only, and are deleted automatically because no further action is required.

2.5.3 Operating System Messages

Operating System Messages are available on each of the Tasks Area selections. Use Operating System Messages to display messages relating to the operating system for selected system images. The Operating System Messages window can be used to send commands to the operating system or respond to operating system messages. The Operating System Messages icon flashes cyan when there are new messages pending.

To view the list of messages pending for an image, drag the icon for the image and drop it on the Operating System Messages icon.

Operating System Messages window has to be initialized by the Operating System. The following minimum levels of the Operating Systems support console integration:

- MVS/ESA 4.2
- VM/ESA 1.2.2
- VSE/ESA 2.1.0

2.5.4 Daily Tasks

The icons displayed in the Daily Tasks area when in service mode are:

- Activate
- Reset normal
- Deactivate
- Activity

2.5.4.1 Activate

Performs a power-on reset and loads the operating system, bringing selected images to a load complete state using a specified activation profile.

You may specify an activation profile other than the default by double-clicking on any of the CPC or image icons in one of the expanded groups to display the Details window. The current activation profile name is displayed.

2.5.4.2 Deactivate

Stops the operating system, deallocates resources, and clears associated hardware for all selected 9221s or images. In addition, if a 9221 is selected, the deactivate task will perform a power-off. In LPAR mode when an image is selected the partition will be deactivated.

2.5.4.3 Grouping

The Hardware Management Console offers you the possibility to group defined objects in one icon. You can then manipulate this icon with one action.

2.5.4.4 Reset Normal

Terminates any current operations and clears any interruption conditions in the image. A reset normal does not clear the processor main storage during initialization.

Note: The Reset Normal task is only supported for image objects or groups of images.

2.5.4.5 Activity

Displays the system activity for 9221s or a group of 9221s. System activity includes the channel activity and processing activity that has been defined in the default system activity profiles stored on the 9221 Service Processor (SP)s of the selected 9221s. The colors in the System Activity display indicate:

Blue Average of processing activity
Green Average of all channel activity
Red Information about the object is not available

Detailed System Activity Display for an object can be displayed by double-clicking on the object's summary bar.

2.5.5 CPC Recovery Tasks

The icons displayed in the Recovery Tasks area when in service mode are:

- Single Object Operations
- Start
- Stop
- Reset Normal
- PSW restart
- Reset Clear
- Load

2.5.5.1 Single Object Operations

Creates a direct connection to a single object 9221 Service Processor (SP). You may need to connect to an individual 9221 Service Processor (SP) to investigate and resolve exception situations.

Refer to the documentation supplied with the hardware to which you want to connect for a description of the functions that can be performed using this task.

2.5.5.2 Start

Ends instruction stop state for selected 9221s or images that were previously stopped. This changes the operational state to Operating.

2.5.5.3 Stop

Places all selected 9221s or images in an instruction stop state. This changes the operational state to Stopped.

2.5.5.4 Reset Normal

Terminates any current operations and clears interruption conditions in the 9221 or image. A reset normal does not clear the processor main storage during initialization.

Note: The Reset Normal task is only supported for image objects or groups of images.

2.5.5.5 PSW Restart

Begins a restart interruption of the selected 9221s or images.

A restart interruption will store the current program status word (PSW) at real address 8 and fetch a new PSW from real address 0 in storage.

2.5.5.6 Reset Clear

Terminates any current operations and clears interruption conditions in the 9221 or image and clears processor main storage.

Note: The Reset Clear task is only supported for image objects or groups of images.

2.5.5.7 Load

Enables you to provide or change information used to load the selected image with a control program.

If the 9221 is operating in logically partitioned (LPAR) mode, the logical partition is the target of the load. Otherwise, if the 9221 is operating in basic mode, the 9221 is the target of the load.

2.5.6 Service Tasks

The icons displayed in the Service Tasks area when in service mode are:

- Service Status
- Perform Problem Analysis
- View service history
- Backup critical data
- Hard disk restore
- Checkout tests
- Report a problem
- Transmit Service Data

2.5.6.1 Service Status

Function not provided with 9221

Many of the 9672 service tasks require that the 9672 is first placed in Service Status. For example: Repair a problem cannot be selected until the 9672 is placed in Service Status.

In Service Status, the 9672 status displayed on the Details window is Service (an acceptable status by default). During a service action, status changes (for example: No Power) that would normally cause an exception due to an unacceptable status will not cause an exception.

Service status also prevents messages indicating LAN communications errors from displaying while the 9672/9674 Service Processor (SE) is powered off or during power-on reset.

Note: Customer jobs can still run on a 9672 after it is placed in service status.

2.5.6.2 Perform Problem Analysis

Function not provided with 9221

Analyzes stored data that is collected at the time of an error and determines the type of problem, if any, that exists. Problem Analysis (PA) informs the user of the steps that are necessary to resolve the problem. Problems that PA handles include: 9672/9674 Processor Complex hardware, 9672/9674 Processor Complex licensed internal code, channel hardware, channel licensed internal code, channel interface, 9672/9674 Service Processor (SE) hardware, 9672/9674 Service Processor (SE) license internal code, operating system, and I/O devices.

Problems that are considered to be "hard" errors start PA automatically (this selection is not required). An example of a hard error is a processor check stop.

Problems that can be considered "soft" (recoverable errors) require the operator to select Perform Problem Analysis. This is usually after the operating system reports a problem. Soft errors include interface control checks (IFCCs) and recoverable 9672/9674 Processor Complex errors. When the operator selects a 9672/9674 Processor Complex and starts PA, a window displays the last 50 recoverable errors on that 9672/9674 Processor Complex. The operator can use PA to analyze the error closest to the time of the failure.

2.5.6.3 View Service History

Function not provided with 9221

Displays a list of problems for the selected CPCs. The most recent log entry displays at the top of the list. The status of the problems can be either open or closed.

From the Service History window, you can:

Re-display PA windows

Re-displays the Problem Analysis windows that were invoked when the selected problem was originally reported.

Show problem summary

Displays detailed information about the selected problem including 9672/9674 Processor Complex location and FRUs.

Close selected problem

Changes the current status of the selected problem to closed.

Close all problems

Changes the current status of all open problems to closed.

2.5.6.4 Backup Critical Data

Function not provided with 9221

Copies critical 9672/9674 Processor Complex data from the 9672/9674 Service Processor (SE) to the optical drive on the Hardware Management Console. 9672/9674 Processor Complex data should be backed up when configuration or licensed internal code changes have been made on a 9672/9674 Processor Complex. The data can be restored to the 9672/9674 Service Processor (SE) in the event of a hardware failure by using 2.5.6.5, Hard Disk Restore.

2.5.6.5 Hard Disk Restore

Function not provided with 9221

Copies critical 9672/9674 Processor Complex data from the Hardware Management Console optical drive to the 9672/9674 Service Processor (SE) of the selected 9672/9674 Processor Complex. Use Hard Disk Restore after repairing the 9672/9674 Service Processor (SE) for a problem that caused the licensed internal code of the 9672/9674 Service Processor (SE) to be unusable or after reloading licensed internal code. The data restored to the 9672/9674 Service Processor (SE) is the data that was copied to the optical drive using 2.5.6.4, "Backup Critical Data."

2.5.6.6 Run Checkout tests

Function not provided with 9221

This selection allows you to run either the extended processor or processor - I/O interfaces checkout tests on a selected group of CPCs.

2.5.6.7 Report a Problem

Function not provided with 9221

This selection allows the customer to request service on a selected CPC when Problem Analysis is not necessary or cannot be run.

2.5.6.8 Transmit Service Data

Function not provided with 9221

Allows you to select the types of data for a 9672/9674 Processor Complex or group of 9672/9674 Processor Complexes to be transmitted for remote service.

2.5.7 CPC Remote Customization Tasks

The icons displayed in the CPC Remote Customization Tasks area when in service mode are:

- Remote service
- Problem management
- Customize Problem management
- Account information

2.5.7.1 Remote Service

Allows you to enable or disable remote service for the 9221. When enabled, service call requests and error information to be analyzed by IBM Support may be sent either automatically (if automatic dialing is enabled) or manually by the operator. If you select to do this automatically you are prompted for the IBM Service Support System and service telephone numbers. When disabled, requests for service and error information must be done through voice communications.

One of the selections, **Authorize automatic service call reporting**, will send error information and requests for service automatically to IBM without operator intervention.

2.5.7.2 Customize Problem Management

Allows you to enable or disable alert generation for 9221 problems. When enabled, alerts will be sent to a Problem Management focal point at the LAN address or telephone numbers that you specify. An alert will be generated and sent due to any loss of a Hardware Management Console resource.

2.5.7.3 Operations Management

Allows you to enable or disable remote operations from the central site to a 9221 or group of 9221s. When enabled, commands may be sent directly from the central site to a 9221 Service Processor (SP) through the LAN or the telephone network. The LAN address and telephone numbers used to send operations management reports to the focal point are also defined here.

2.5.7.4 Account Information

Allows you to customize the account information for the 9221. Account information provides a description of the 9221, which includes its physical location; customer name, address, and telephone numbers; IBM customer, sales branch, service branch, region, and country account numbers.

2.5.8 Object Definition Tasks

Allow you to define or change the definition of a 9221 object on a Hardware Management Console. Remove Object Definition is available only in access administrator mode, it is included here for reference only. The following icons are available:

- Change object definition
- Add object definition
- Remove object definition (access administrator only)

2.5.8.1 Change Object Definition

Allows you to change the name of any object that is defined. During definition the 9221 Configuration Information window allows you to change the system name and network (domain) name. When Change Name is complete, the object's name will be changed in all groups that contain the object.

2.5.8.2 Add Object Definition

Allows you to define a 9221 that is currently part of the Undefined group. This is the only object definition task that can be done when logged on in service mode. You cannot change the system name or network name while adding the 9221 object. Once a 9221 is defined, it is removed from the Undefined Processors group and is added to the Defined group.

2.5.8.3 Remove Object Definition

Allows you to remove (undefine) a 9221 that is currently part of the Defined group. During undefine the Remove Task Confirmation window allows you to continue or quit the removal task. Once a 9221 is undefined, it is removed from the Defined Processors group. The undefined CPC is added to the Undefined group and must be defined again before it can be activated or grouped.

2.5.9 Change Management Tasks

The icons displayed in the Change Management Tasks area when in service mode are:

- Engineering changes (ECs)
- 9672/9674 Processor Complex EC details
- Retrieve internal code
- Change internal code
- Product Engineering directed changes
- System information

2.5.9.1 Engineering Changes (ECs)

Function not provided with 9221

Used to copy Engineering Changes (ECs) to the EC staging area and apply to the selected 9672/9674 Processor Complexes.

2.5.9.2 CPC EC Details

Function not provided with 9221

Lists ECs currently installed on the 9672/9674 Processor Complex.

2.5.9.3 Retrieve Internal Code

Function not provided with 9221

Use Retrieve Internal Code to copy internal code changes from the selected source to the Hardware Management Console hard disk. This task is to be used when you are working with internal code changes for the CPCs and 9672/9674 Service Processor (SE)s.

Changes may be retrieved from diskette, an optical cartridge, or the IBM support system.

The procedure for internal code changes is described in 5.2, "Procedures for Changes" on page 172.

2.5.9.4 Change Internal Code

Function not provided with 9221

Allows you to modify 9672/9674 Processor Complex licensed internal code of selected 9672/9674 Processor Complexes to provide new operations, or correct or improve existing operations.

2.5.9.5 Product Engineering Directed Changes

Function not provided with 9221

Allows you to install temporary licensed internal code fixes on the selected 9672/9674 Processor Complexes.

2.5.9.6 System Information

Function not provided with 9221

Displays information about 9672/9674 Processor Complex machine type, model numbers, serial numbers, and licensed internal code.

2.5.10 CPC Operational Customization Tasks

The icon displayed in the Operational Customization Tasks area when in service mode is:

- View Activation Profiles
- Scheduled operations
- Customize date/time

2.5.10.1 View Activation Profiles

Enables you to view the activation profiles that are stored in the 9221 Service Processor (SP).

2.5.10.2 Change/Delete Activation Profiles

Refer to 3.5, "Activation Profiles" on page 35 for a detailed explanation of Activation Profiles.

2.5.10.3 Automatic Activation

Defines whether a machine should be automatically activated at power-on reset.

2.5.10.4 Scheduled Operations

Function not provided with 9221

Allows you to schedule the time and dates for automatic licensed internal code updates and backup of critical hard disk data for the 9672/9674 Service Processor (SE).

2.5.10.5 Customize Date/Time

Allows you to set the date and time in the 9221 Service Processor (SP)s for the selected 9221s from the Hardware Management Console.

2.5.11 CPC Configuration Tasks

The CPC Configuration Tasks operate on all CPCs defined for the Hardware Management Console, no selection of individual CPCs is required.

The icons displayed in the CPC Configuration Tasks area when in service mode are:

- Perform model conversions
- Transmit vital product data
- Edit frame layout

2.5.11.1 Perform Model Conversions

Function not provided with 9221

Automatically updates configuration information for all newly installed 9672/9674 Processor Complexes.

2.5.11.2 Transmit Vital Product Data

Function not provided with 9221

Gathers vital product information from all defined 9672/9674 Processor Complexes and allows you to either transmit the data to the IBM service support system or to store the information on the Hardware Management Console hard drive or diskette.

2.5.11.3 View Frame Layout

Function not provided with 9221

View frame layout provides a graphic view of the devices in a selected string. By opening (double-clicking on) the image of a device you can determine machine type, model, serial number, and device location.

2.5.11.4 Edit Frame Layout

Function not provided with 9221

Edit frame layout provides a graphic view of the devices in a selected string. By opening (double-clicking on) the image of a device you can determine machine type, model, serial number, and device location. Edit frame layout shows you the locations in the frames available for adding or moving a selected device. You can also use Edit frame layout to remove devices, change the product information for a device, or add a frame to the string.

2.5.11.5 RPQ Support

Function not provided with 9221

Assists service personnel in using/installing a specific RPQ.

Chapter 3. Installing, Customizing and Using the Hardware Management Console

This chapter covers installing, customizing and using the Hardware Management Console.

You can only use a Hardware Management Console with 9221 211 based processors if the prerequisites described in 2.2, "Hardware Management Console Prerequisites" on page 8 are met. To summarize the minimum configuration of the 9221 Service Processor (SP) should be either:

- PC730 IDE as shipped with FC9226 or new build 9221 211 based
- 9577i Server (RPQ S02366) in the following configuration:
 - 486DX4 33/99 Mhz processor
 - 256KB L2 Cache
 - 1 or 2MB Video Memory
 - 24MB of ECC Memory
 - 2.88MB Diskette Unit
 - 340MB SCSI-2 Hard Disk
 - Internal Tape Back Unit (ITBU) in lower bay
 - The following adapter configuration
 1. SCSI-2
 2. 3270
 3. 16/4 Token-Ring
 4. Multi Protocol Adapter (MPA)
 5. not used

3.1 Installing the Hardware Management Console

For detailed information on how to install the Hardware Management Console refer to the following installation instructions:

P/N 46H8750 *RPQ S02364 HMC for RO7 Machines*

P/N 46H8803 *RPQ S02368 Eurocontrol code load for 9577i used as a Hardware Management Console*

P/N 46H8802 *RPQ S02366 Eurocontrol code load for 9577i used as support processor*

P/N 46H8751 *Installing FC1133 (Token-Ring adapter) on 9221 RO7 based machine*

Note: If you want to obtain a copy of these installation instructions contact your Availability Services Organization.

3.2 Using the Hardware Management Console

You can only use the Hardware Management Console application when it is started as an OS/2 application on the Hardware Management Console. Your OS/2 system is setup so that it automatically starts the Hardware Management Console application.

If the Hardware Management Console application cannot be found in the window list, it can be started from the following areas:

1. ICON on the OS/2 Launchpad
2. Hardware Management Console application shadow on the OS/2 Desktop
3. Hardware Management Console application object in Hardware Management Console folder
4. Hardware Management Console application object in the startup folder of the OS/2 system.

The CM/2 3270 emulation and DCAF sessions are started by the Hardware Management Console application.

Before you can use the Hardware Management Console application you will have to log on to it. Figure 2 shows the logon panel of the Hardware Management Console application.



Figure 2. Hardware Management Console Application Logon Panel

Note: If the Hardware Management Console application is started and you do not get the panel on Figure 2 refer to Chapter 4, "Servicing the Hardware Management Console" on page 43 for information.

Table 8 on page 31 shows the user classes available for the Hardware Management Console.

Table 8. Available User Modes for Hardware Management Console

User ID	Password	Description
ACSADMIN	password	The Access Administrator user ID class controls amongst others which user IDs are allowed to log on. It is also used for customizing specific tasks. Refer to 2.5, "Hardware Management Console Tasks" on page 11 for tasks available in ACSADMIN mode.
OPERATOR	password	The Operator user ID class is mainly used for operating the attached 9221 systems. Refer to 2.5, "Hardware Management Console Tasks" on page 11 for tasks available in OPERATOR mode.
ADVANCED	password	The Advanced Operator user ID class is also used for operating the attached 9221 systems. It can also be used for specific diagnostics tasks for the Hardware Management Console. Refer to 2.5, "Hardware Management Console Tasks" on page 11 for tasks available in ADVANCED mode.
SYSPROG	password	The Systems Programmer user ID class is used for customizing both the Hardware Management Console and the attached 9221 systems. Refer to 2.5, "Hardware Management Console Tasks" on page 11 for tasks available in SYSPROG mode.
SERVICE	servmode	The Service Representative user ID class is used for servicing the Hardware Management Console. It cannot be used for servicing the 9221 systems from the Hardware Management Console. Refer to 2.5, "Hardware Management Console Tasks" on page 11 for tasks available in SERVICE mode.

Note: When using Single Object Operations to an attached 9221 system the user is logged on in the same mode as on the Hardware Management Console.

After you log on you will see the Hardware Management Console workplace as shown on Figure 3 on page 32. For details about the items which can be found on the Hardware Management Console workplace refer to 2.3, "Using the Hardware Management Console Windows" on page 8.

Figure 4 on page 32 shows an example of the Console Actions Work Area.

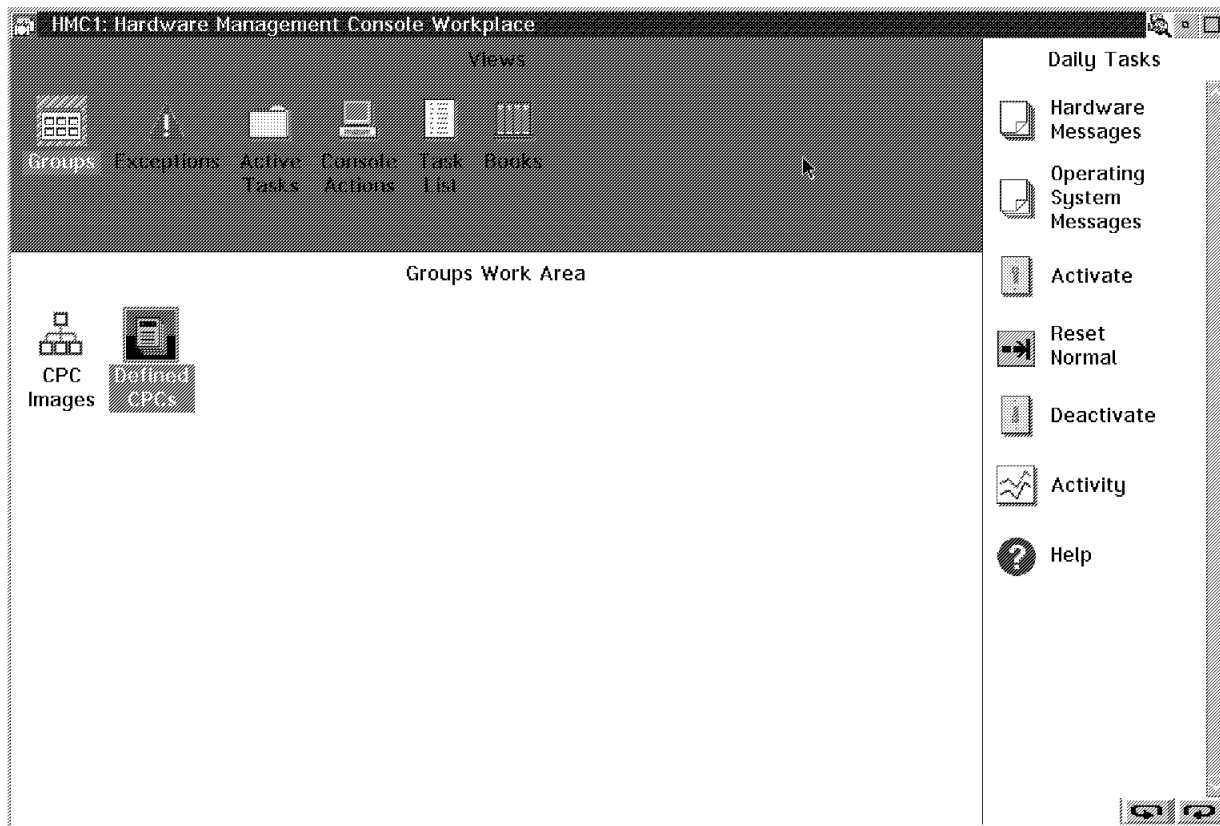


Figure 3. Hardware Management Console Workplace

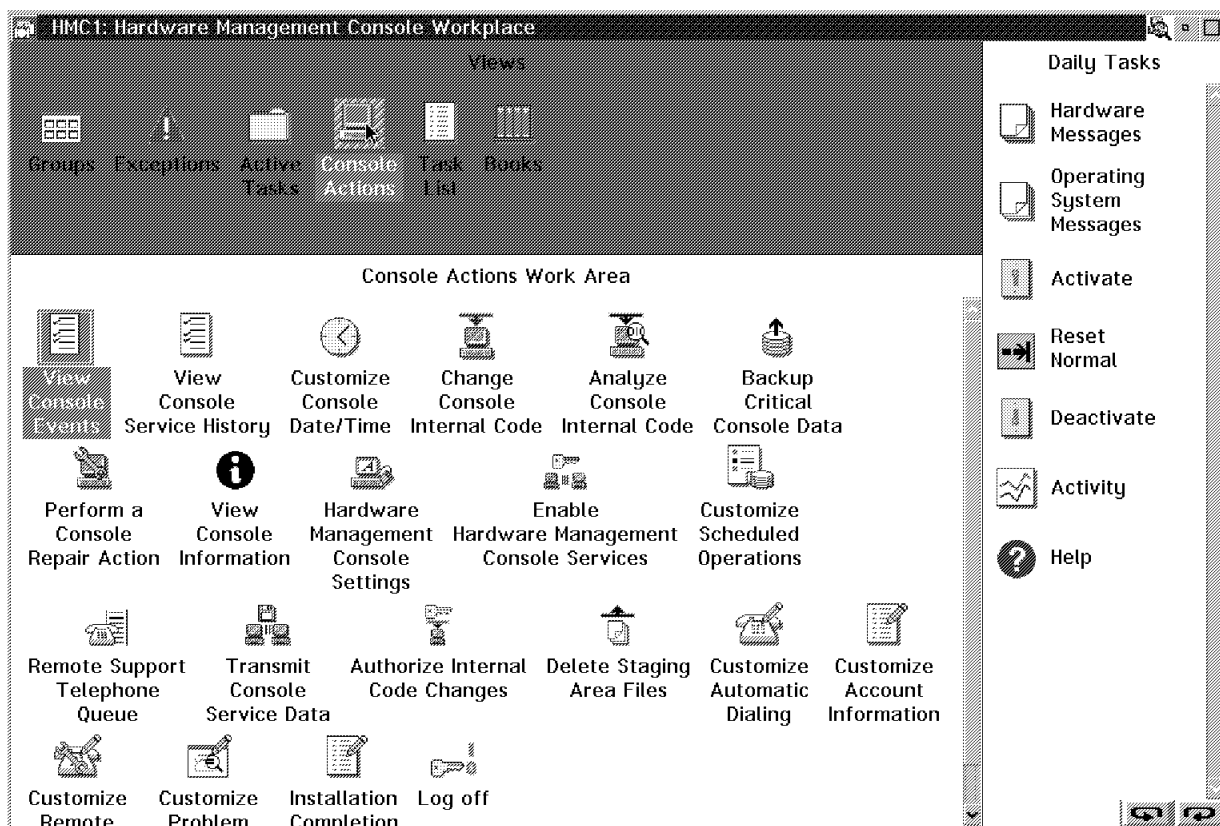


Figure 4. Hardware Management Console Console Actions Work Area

3.3 Stopping the Hardware Management Console

If it is necessary to stop the Hardware Management Console, for example for service or power maintenance, do the following:

Warning

Never power off the PS/2 or PC on which the Hardware Management Console code is running. You might lose data on the Hardware Management Console when doing this. If the Hardware Management Console appears to be hanging (OS/2 recovery might take some minutes) use C-A-D (Control Alt Delete) to force that the buffers are written out to disk and reboot OS/2.

The procedure to be used is the following:

1. Double click in the left upper corner of the Hardware Management Console window

This will log you off from the Hardware Management Console.

If the panel as shown in Figure 5 displays, check the following:

- a. No tasks are running, check active tasks for status
- b. No Single Object Operations (DCAF) sessions are active

Figure 6 on page 34 shows for example a DCAF session with name MC8SE active.

- c. Retry the log off action

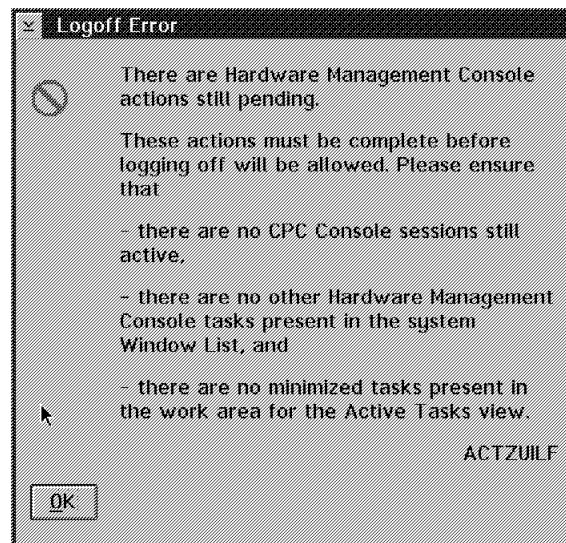


Figure 5. Warning Screen Hardware Management Console Logoff

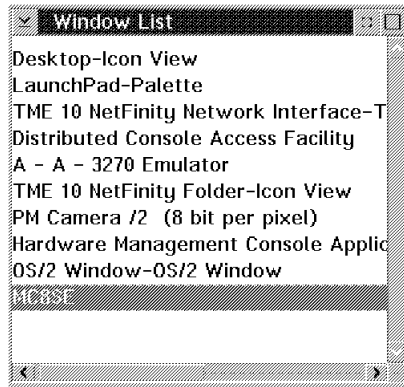


Figure 6. CTRL-ESC Screen Hardware Management Console with DCAF (MC8SE) Session Active

2. Double click in the left upper corner of the Hardware Management Console window

Confirm this action and the Hardware Management Console application will be stopped.
3. Stop additional applications running on the Hardware Management Console
4. Shut down OS/2 from the Launchpad or using the right mouse key on an empty spot on the workplace.

3.4 Customization of the Hardware Management Console

The following items can be customized on the Hardware Management Console itself:

- Object Instance Data

Accepted status and activation profile for defined objects.

- Panel Instance Data

Since the Hardware Management Console is an OS/2 application, you have the possibility to use your own settings for colors, fonts, position and size.

Unless you are the **only** user of the Hardware Management Console we advise you to use this option with care since it might not add to usability or serviceability.

- Group data

You can group objects together, so they can be manipulated with one action.

- Status colors and/or patterns

If needed you can define your own colors for the status shown. Also the possibility exists to use patterns.

Unless you are the **only** user of the Hardware Management Console we advise you to use this option with care since it might not add to usability or serviceability.

For example, we use RED for those instances where there are problems. You could decide to change this color to GREEN. If you get a problem with one of the defined objects, another user might not notice this directly and your end-users might be impacted even more.

- User profile data

You can define additional users to use the Hardware Management Console or change passwords for defined user IDs.

- Account information data

The account information shows, for example, the location of the machine and whom to contact in case of problems. This information is transmitted to the IBM support system in case of problems.

- Remote Service Information

The remote service information shows which telephone numbers to use for remote support. Also details how to dial are provided.

- Problem Management Information

The Hardware Management Console provides possibilities for informing other systems in case of problems. You can define information for this on these panels.

- Automatic Dialing Information

Specifies whether the Hardware Management Console can use automatic dialing in case of problems.

3.5 Activation Profiles

Before you can use your ES/9000 9221 system you have to define the following:

- IOCDS

The Input/Output Control Data Set (IOCDS) contains the I/O definitions for the ES/9000 9221 processor. The IOCDS is also used to define Logical Partitions (LPARs) when you want to run your machine in PR/SM LPAR mode.

It is important that the IOCDS matches the hardware configuration exactly.

- Activation Profiles

The Activation Profiles are used to instruct the 9221 what to do in the case of:

- Power On Reset (POR)
- Load
- Activate of an IMAGE (LPAR)

The following types of activation profiles exist:

3.5.1 Reset Profile

The Reset Profile defines how the 9221 should be reset when powered on.

3.5.1.1 Reset Profile in LPAR Mode

A Reset Profile in LPAR mode consists of the following parts:

- General Information

Profile Name	Logical Name for this profile
Mode	Logical Partition
Description	Logical Description for this profile
IOCDS	A0, A1, A2 or A3
Token In IOCDS	YES / NO (IOCDS has to be written by HCD or VM/ESA version 2 to include a Token)

- Partitions in IOCDS list
- Load Delay for power sequencing number of seconds
- Logical Partition List
 - LPAR activation sequence
- Hardware Resources
 - Central Storage nnn MB
 - Expanded Storage nnn MB
- Dynamic I/O Definition Options
 - When enabled, the percentage the IOCDS is allowed to grow
- Options
 - Reset the input/output interface when the system checkstops : Enable / Disable
 - Time limit for system recovery Enable / Disable
 - LPAR settings

3.5.1.2 Reset Profile in S/390 or Basic Mode

A Reset Profile in S/390 mode consists of the following parts:

- General Information
 - Profile Name Logical Name for this profile
 - Mode ESA/390
 - Description Logical Description for this profile
 - IOCDS A0, A1, A2 or A3
 - Token In IOCDS YES / NO (IOCDS has to be written by HCD or VM/ESA v2 to include a Token)
 - Load Delay for power sequencing number
- Load Information
 - Specifies what load profile should be used
- Hardware Resources
 - Central Storage nnn MB
 - Expanded Storage nnn MB
- Dynamic I/O Definition Options
 - When enabled, the percentage the IOCDS is allowed to grow
- Options
 - Reset the input/output interface when the system checkstops : Enable / Disable
 - Time limit for system recovery Enable / Disable

3.5.2 IMAGE Profile

An IMAGE profile consists of the following parts:

- General Information
 - Profile Name Exact name as defined in IOCDS
 - Mode S/370 or S/390
 - Description Logical Description

Partition Identifier

0 - F

It is good practice to have one partition which can use the same system identifier as your system identifier in basic mode.

For example:

The serial number of your 9221 is 51F3456.

The system identifier in basic mode would be vv0F345692210000 (where vv is the version code depending on the model).

Depending on the partition identifier the system identifier would be vv0P345692210000. P can be between 0 and F.

Using F as the partition identifier would give the same system identifier as in basic mode.

To be complete the 0 after the vv can also vary between 0 and 1 depending on the model and depending on how many logical processors are defined for the LPAR.

- Load Information

Load during activation
Target Processor
Load Address
Load Parameter
Load Time out

Enable / Disable
logical processor

- S/370 channels

Maps S/370 channels to S/390 CHPIDs

- Processor Characteristics

Number of processor
Dedicated
Weight
Capped

1 or 2
Enabled / Disabled
Percentage of shared processors
Yes / No

- Security

Global Performance Data Control
I/O Configuration Control
Cross Partition Authorization
Logical Partition Isolation

Enabled / Disabled
Enabled / Disabled
Enabled / Disabled
Enabled / Disabled

- Storage

Central Storage nnn MB

Origin defined by User or System
Determined

Expanded Storage nnn MB

Origin defined by User or System
Determined

3.5.3 LOAD Profile

The LOAD profile consists of the following parts:

Profile Name	Logical Name for the profile
Description	Logical Description for the profile
Load Type	Normal / Clear
Store Status	Enabled / Disabled
Target Processor	
Load Address	
Load Parameter	
Load Time Out	Seconds

3.6 Status Information

The Hardware Management Console can provide status information about the objects it supports. If you want to view the status of an object do the following:

- Double click with the mouse cursor on the object
- The system will show you a screen which looks like Figure 7

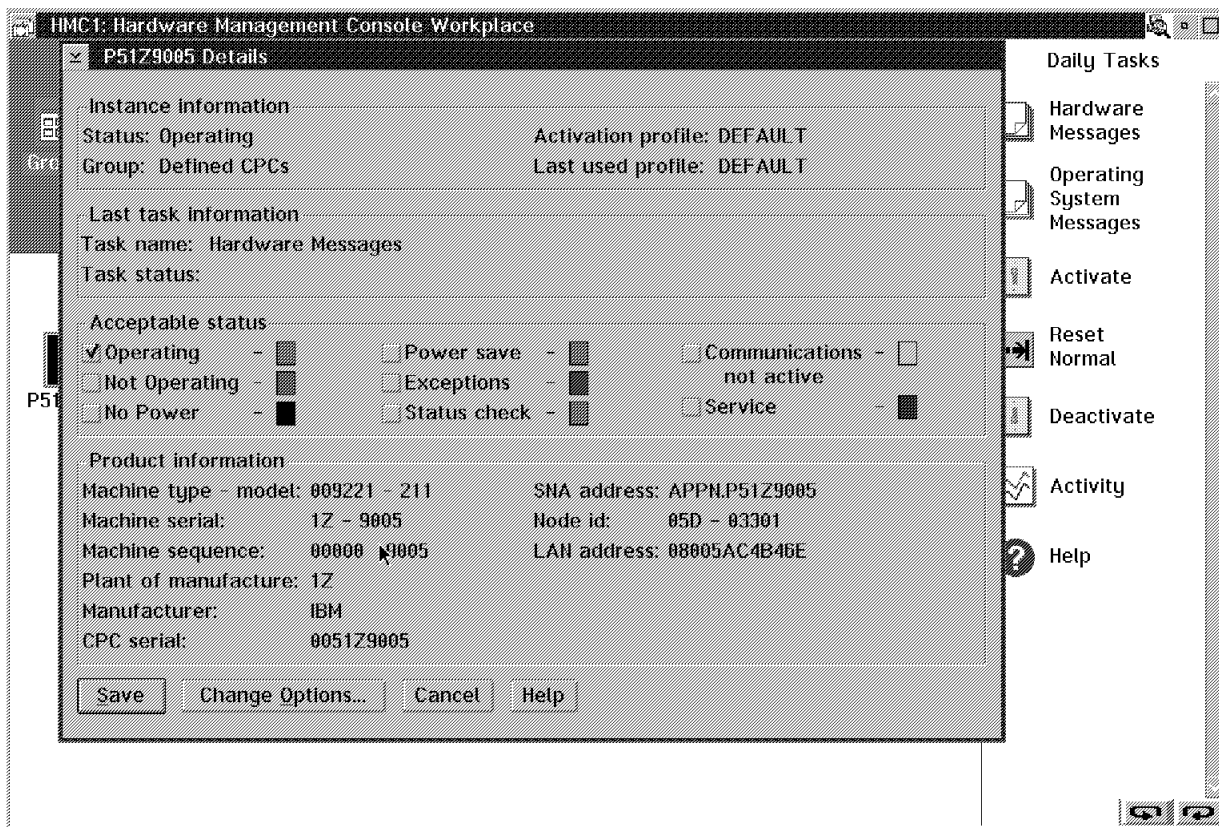


Figure 7. Status Information for a 9221 System

The screen is divided into four parts:

1. Status Information

Shows the following:

- Status (refer to acceptable status for explanation)
 - The group of which the 9221 is a part
 - The Activation profile that will be used at the next activate action
 - The last used profile
2. The last task that was executed and the status, if any, of that task
 3. Acceptable status

You can indicate what you consider an acceptable status

Operating	System running with valid PSW
Not Operating	No valid PSW
No Power	No power is available to the system
Power Save	Not provided with 9221. The CPC is running on the Battery Back Unit
Exceptions	Conditions exist, such as channels not operating
Status Check	Hardware problems with 9221
Communications not active	LAN problems
Service	Not provided with 9221. The CPC is in service status

4. Product information

Provides details of the machine of which you are displaying the status

If you want to change which Activation Profile should be used at the next activate, use "Change options". You will receive a panel which looks like Figure 8. On this panel you can view and select (save) the Activation Profiles to be used at the next activation.

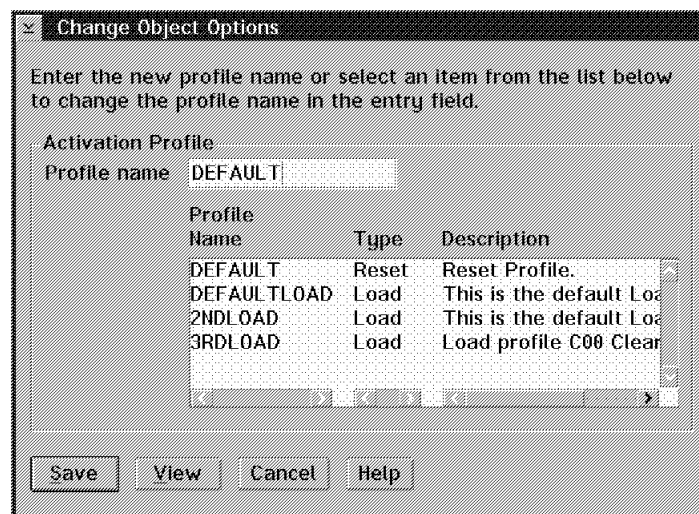


Figure 8. Change Options for a 9221 System

Figure 9 on page 40 shows the details of a 9221 image, in this case a partition, where you can see that not all status information is shown but you can find a new status : not activated which means that the partition was not activated.

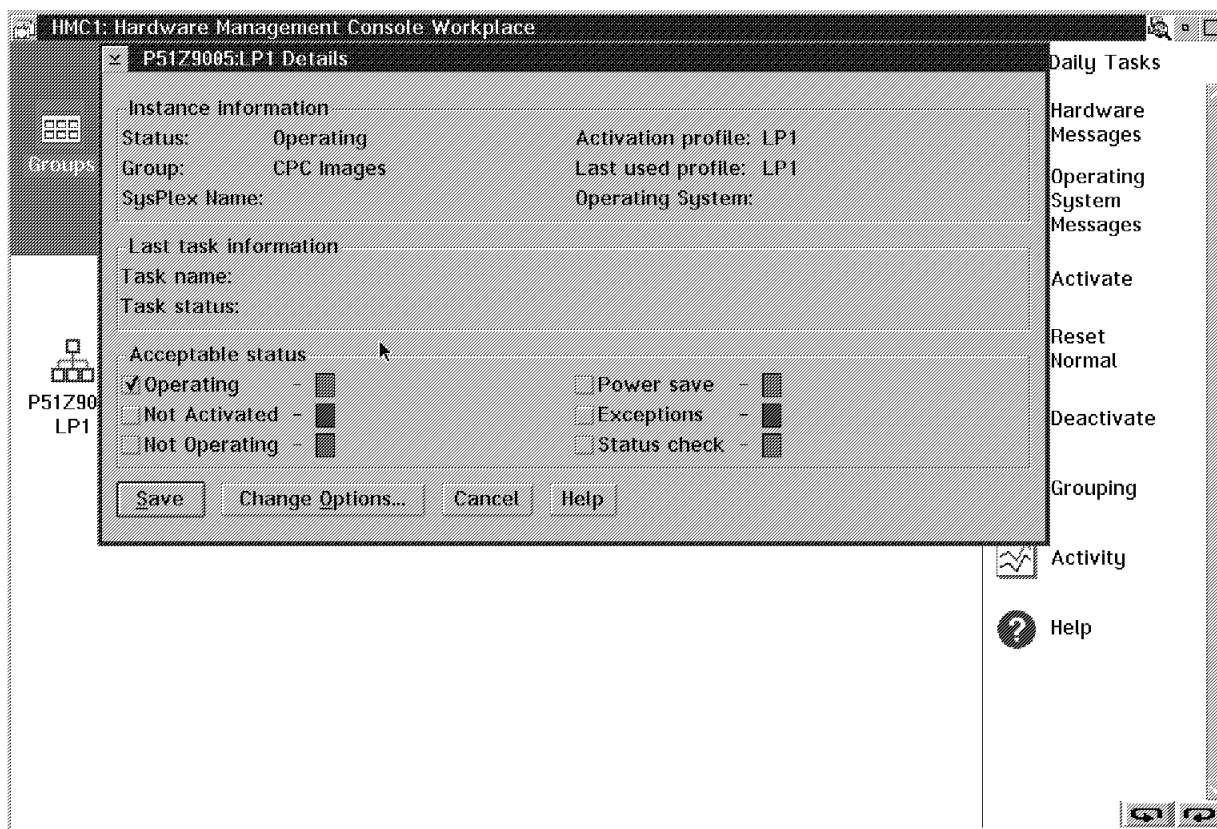


Figure 9. Status Information for a 9221 LPAR

Figure 10 shows the change options for an image (an LPAR partition). You can see here that you cannot select a reset profile from this window.

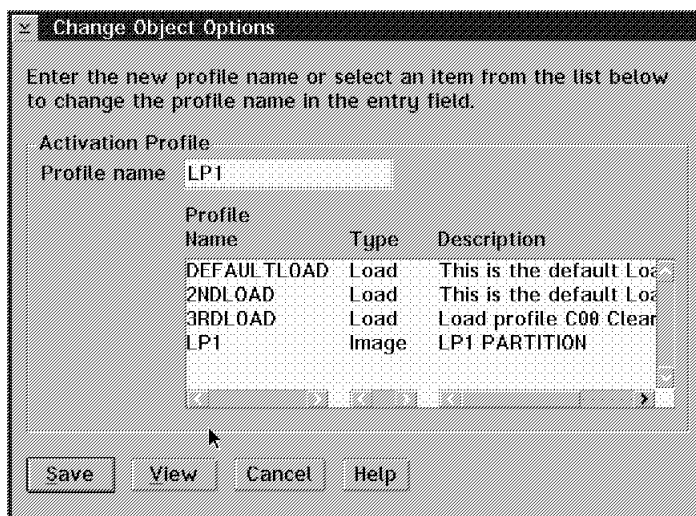


Figure 10. Change Options for a 9221 LPAR

3.7 Symbols Used on the Panels

The following symbols are used on the panels:

Figure 11. Symbol Representing a 9221

Figure 12. Symbol Representing a 9672

Figure 13. Image Running in BASIC Mode

Figure 14. Image in LPAR Mode

Chapter 4. Servicing the Hardware Management Console

This chapter deals with servicing the Hardware Management Console when used with 9221 processors. It is mainly a rewrite/update of the 9672 Service Guide.

It shows details on the configuration of the PS/2 or PC used and how to resolve problems.

In some procedures the term support element (SE) is used. In general the term SE is used for the 9672 line of processors while SP is used for the 9221 line of processors. In some procedures the terminology used can represent either an SE or an SP.

4.1 Hardware Management Console Locations

This part provides an overview of features, and shows how to determine FRU locations within the system.

There are two different kinds of personal computers used for Hardware Management Consoles: MicroChannel bus based PS/2s (Model 95xx) and ISA bus based PCs (Model 68xx).

These sections show the locations of cables and feature cards used in the Hardware Management Console. For additional information on locations, refer to the maintenance information shipped with your Hardware Management Console.

The following examples show a particular type/model, but any of several different type/models may be used for the Hardware Management Console. The card slots used for the feature adapters may be different for the other type/models. In addition, several adapter functions may be on the system board instead of a feature card. The cables for these features are all unique. Refer to the maintenance information for the locations of the other connectors.

4.1.1.1 Locations for PS/2 Based Hardware Management Consoles

Note: Depending on the PS/2 type and model, display and SCSI function may be supported on either a feature card or system board. Use the following as a guide:

Model	Configuration
9595-OMF	SCSI - card, Display - card
9577-ONF	SCSI - system board, Display - card
9595-OLG	SCSI - card, Display - card
9577-BNG	SCSI - card, Display - system board
9577-SNG	SCSI - card, Display - system board
9577-S03	SCSI - card, Display - system board
9577-VTG	SCSI - card, Display - system board
9577-S09	SCSI - card, Display - system board

The adapters may be identified by their I/O connectors as follows:

Adapter	Connector Configuration
3270	One BNC connector
MultiProtocol	One 25 pin D-shell connector

Token-Ring	One RJ45 or 9 pin D-shell connector including a green dot with 16/4 printed on it
SCSI	One high density 50 pin connector
XGA/SVGA display	One 15 pin D-shell connector

An Example: Figure 15 shows a PS/2 model 9577. The cards' slots are numbered 1 to 5 starting at the bottom. Slot 5 is not used. In the figure:

- A** Card slot 4 - Multiprotocol adapter card, cable goes to modem
- B** Card slot 3 - LAN card, cable goes to MSAU / MAU
- C** Card slot 2 - 3270 emulator card, cable goes to workstation controller
- D** Card slot 1 - XGA-2 Display adapter, cable goes to display

On 9577i models S3-928 SVGA is on Systemboard, slot 1 contains MCA SCSI-2 adapter card.

- E** Pointing device port, cable goes to mouse
- F** Keyboard port, cable goes to keyboard
- G** Parallel port, cable goes to customer's printer (if installed)
- H** External SCSI connector, no external devices, not present on all 9577 models
- J** Power connector, cable to customer power source

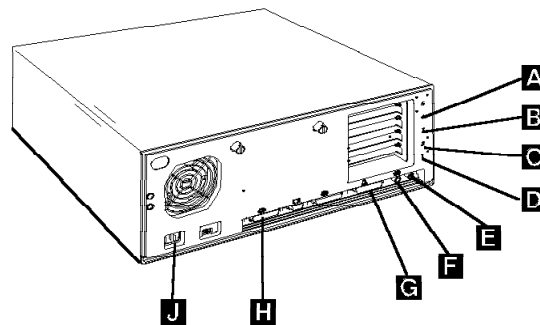


Figure 15. Rear of a PS/2 Hardware Management Console Showing Cable and Feature Card Locations

4.1.1.2 Card Locations for ISA Bus Based Hardware Management Consoles

The feature cards can be plugged in either of the two configurations shown below. **Service Tip:** All adapters have I/O connectors. The two configurations can be identified by the slot with no adapter (blank).

Slot	Feature Card	Slot	Feature Card
1	3270	1	Wide Area Connector
2	Wide Area Connector	2	(blank)
3	Token-Ring	3	Token-Ring
4	(blank)	4	SCSI
5	SCSI	5	3270

If you are not sure of the locations, or the configuration does not match any of those shown above, the Hardware Management Console feature cards may be identified as follows:

Adapter	Connector Configuration
3270	One BNC connector
Wide Area Connector	Two 15 pin D-shell connectors
Token-Ring	One RJ45 or 9 pin D-shell connector including a green dot with 16/4 printed on it
SCSI	One high density 50 pin connector

4.2 Hardware Management Console Information

This chapter contains information used to service the Hardware Management Console.

There are two types of Hardware Management Console possible: ISA bus based PC (Model 68xx) and MicroChannel based PS/2s (Model 95xx). Before starting a repair on a Hardware Management Console, check to see which type you will be working on.

- For repairs on PC based machines, read the information under 4.2.1, "General Information" then go to 4.3, "Start of Repair for ISA Bus PCs" on page 46.
- For repairs on PS/2 based machines, read the information under 4.2.1, "General Information" then go to 4.15, "Start of Repair for All PS/2 Based" on page 106.

Information and procedures common to both the PC-based and PS/2-based machines are found in 4.26, "Common Information and Procedures" on page 137.

4.2.1 General Information

There may be different maintenance manuals for each PC or PS/2 model. If you are directed to use these manuals, make sure that you use the correct one for the model on which you are working.

Attention: The system board, adapters, memory modules, and the alternate-microprocessor can be damaged by electrostatic discharge. If you are directed to exchange FRUs in a Hardware Management Console, refer to "Handling Electro-Static Discharge (ESD) Sensitive Devices" in the PC maintenance information.

Removing AC power from a Hardware Management Console may cause loss of data on the Hardware Management Console hard disks. If AC power must be removed, shut down the Hardware Management Console. For instructions, refer to 3.3, "Stopping the Hardware Management Console" on page 33.

4.3 Start of Repair for ISA Bus PCs

Before starting here, ensure that you read 4.2.1, “General Information” on page 45 and that you are working on a PC based Hardware Management Console.

Find the task you want to do in the **Action** column of the following table. Then, go to the information in the **Go To** column.

Action	Go To
Repair a Hardware Management Console problem.	4.4, “Hardware Management Console Failures for ISA Bus PCs” on page 47
Test a Hardware Management Console.	4.4, “Hardware Management Console Failures for ISA Bus PCs” on page 47
Back up hard disk information on the Hardware Management Console.	4.27.3, “Saving Hardware Management Console Configuration” on page 157
Restore information to a Hardware Management Console hard disk.	4.27.4, “Restore Hard Disk Information (Hardware Management Console)” on page 158
Reset the default domain security for a Hardware Management Console or CPC.	4.27.6, “Resetting Default Domain Security” on page 163.
Check modem settings.	4.27.1, “Modem Settings” on page 154.
Token-Ring adapter LEDs.	4.27.6.1, “Auto 16/4 Token-Ring Adapter LEDs” on page 164
Token-Ring terms.	4.27.7, “Terms Used For LANs” on page 164
Hardware Management Console feature card locations.	4.1.1.2, “Card Locations for ISA Bus Based Hardware Management Consoles” on page 44
Additional PC maintenance information.	Maintenance information for PC shipped with the system.

Table 9. Maintenance Information for ISA BUS PCs

4.4 Hardware Management Console Failures for ISA Bus PCs

Use this chapter when you are directed here by a Perform a Console Repair window (Hardware Management Console).

Note: If you are directed to exchange PC FRUs, refer to the PC maintenance information for removal and replacement instructions.

1

Were you directed here by a Perform a Console Repair window?

NO YES

↓ Go to step 3.

2

Are you working on a Hardware Management Console or 9221 Communication not active problem?

NO YES

↓ Go to 4.5, “ Operator Detected Errors for ISA Bus PCs” on page 49.

3

On the Perform a Console Repair window:

- Write down the FRU list for the problem.
- Select **Delay the repair**.
- If another Repair and Verify window displays, select **Enter**.

Find any FRU location from your FRU list on Table 10 and go to the page indicated.

Your FRU list may contain FRUs that are not in the table.

The table shows most FRUs start with xxxx. For Hardware Management Console FRUs the xxxx is replaced with A00M.

Before exchanging any FRUs, record the FRU part number, serial number, and engineering change (EC) level of the new FRU.

FRU Locations	Go To
xxxx_RW_OPTICAL_DISK xxxx_RW_OPTICAL_DRIVE xxxx_RW_OPTICAL_DRIVE_CABLE	4.9, "Read/Write Optical Drive Errors for ISA Bus PCs" on page 60
xxxx_FIXED_DISK	4.8, "Hard Disk Errors for ISA Bus PCs" on page 58
xxxx_DISKETTE xxxx_DISKETTE_DRIVE xxxx_DISKETTE_DRIVE_CBL	4.10, "Diskette Errors for ISA Bus PCs" on page 65
xxxx_COMM_ADAPTER LOCAL_MODEM xxxx_MODEM_CABLE	4.11, "Remote Support/Remote Console Errors for ISA Bus PCs" on page 67
xxxx_TOKEN_RING_ADAPTER xxxx_LAN_CABLE LAN_CONNECTOR_DEVICE	4.27, "Local Area Network (LAN) Feature Errors" on page 138
xxxx_3270_ADAPTER xxxx_3270_CABLE	4.12, "3270 Feature Errors for ISA Bus PCs" on page 71
xxxxAA01	4.7, "Undetermined Errors for ISA Bus PCs" on page 52
No FRUs displayed	4.5, "Operator Detected Errors for ISA Bus PCs" on page 49

Table 10. FRU Locations Table ISA BUS PCs

4.5 Operator Detected Errors for ISA Bus PCs

Use this section when:

- Problem Analysis ran for a failure on a Hardware Management Console and no FRUs were reported.
- Problem Analysis could not be run because of the failure on the Hardware Management Console.
- Messages displayed on the Hardware Management Console.

Find the reason for the call under **Problem Area Reported**. Then, go to the page indicated.

<i>Table 11. Problem Area Reference</i>	
Problem Area Reported	Go To
Display	4.13, "Display Problems for ISA Bus PCs" on page 75
Read/Write optical drive	4.9, "Read/Write Optical Drive Errors for ISA Bus PCs" on page 60
Hard disk	4.8, "Hard Disk Errors for ISA Bus PCs" on page 58
Diskette drive	4.10, "Diskette Errors for ISA Bus PCs" on page 65
Telecommunications feature	4.11, "Remote Support/Remote Console Errors for ISA Bus PCs" on page 67
Hardware Management Console used as system (operator's) console	4.12, "3270 Feature Errors for ISA Bus PCs" on page 71
Message of SYSxxxx indicating a TRAPxxxx occurred. (xxxx can be any digits.)	4.6, "Trap Errors for ISA Bus PCs" on page 50
Message of LTxxxxx or ACSxxxx indicating a Communications Manager or Local Area Network error occurred because of any of the following: Lobe cable problem Beaconing condition Other communications problem	4.27, "Local Area Network (LAN) Feature Errors" on page 138
Operator reported "Communication not active."	4.27, "Local Area Network (LAN) Feature Errors" on page 138
Message of MACHxxx indicating a Communications Manager or 3270 communications error occurred because of a 3270 communications failure.	4.12, "3270 Feature Errors for ISA Bus PCs" on page 71
Operator reported that either OS/2 or the Hardware Management Console application did not start but there were no other error indications.	4.7, "Undetermined Errors for ISA Bus PCs" on page 52
All other problems (for example; parity errors, power, POST codes, blank display)	4.7, "Undetermined Errors for ISA Bus PCs" on page 52

4.6 Trap Errors for ISA Bus PCs

Use this section when:

- The operator reports a message indicating that a trap condition occurred and Problem Analysis either did not find the problem or could not be run because of the error.
- The Hardware Management Console displays a message of SYSxxxx indicating a TRAPxxxx occurred.

For the locations of the feature cards, refer to 4.1.1.2, "Card Locations for ISA Bus Based Hardware Management Consoles" on page 44. For the locations of other FRUs, refer to the PC maintenance information shipped with the system.

1

Did the customer report a message indicating TRAP0008?

YES NO

↓ Go to step 3.

The messages start with SYSxxxx (xxxx can be any digits), the trap indication is displayed following the message.

2

Use the diagnostics and procedures for the PC you are working on to isolate the failure and exchange the FRUs. Select **System Unit** problem area and select the test for **Run All Selected**.

- If the tests run without error, restart the Hardware Management Console and close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If an error is detected, use the procedures in the PC maintenance information to isolate the problem. When complete, restart the failing console and close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

3

Was there a message indicating TRAP0002?

YES NO

↓ Go to 4.7, "Undetermined Errors for ISA Bus PCs" on page 52.

4

Use the diagnostics and procedures for the PC you are working on to isolate the failure and exchange the FRUs.

Refer to 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **System Unit** problem area and the test for **Memory**.

Note: For the Hardware Management Console, ensure that all LUNs (Logical Unit Numbers) for the memory test selection are run. Refer to "Using the Test Programs: Changing Logical Unit Numbers" in *IBM Personal Computer Hardware Maintenance Manual*, S83G-7789.

- If the tests fail, use the procedures in the PC maintenance information to isolate the problem. When complete, close the call. For instructions, see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
 - If the tests do not fail or if you cannot isolate the problem, go to 4.7, "Undetermined Errors for ISA Bus PCs" on page 52.
-

4.7 Undetermined Errors for ISA Bus PCs

Use this section when the operator detected a failure and Problem Analysis did not run automatically or, Problem Analysis could not be run because of a problem on the Hardware Management Console.

The following procedure will direct you to use the documents shipped with the Hardware Management Console to repair failures. Refer to 4.14.4, "Documentation and Diskettes" on page 79. **After making the repair, return to this procedure to complete the call.**

For the locations of the feature cards, refer to 4.1.1.2, "Card Locations for ISA Bus Based Hardware Management Consoles" on page 44.

1

Do you have **all** the following symptoms during power on?

After power on the OS/2 Desktop should display, then the Logon window for the Hardware Management Console.

- No POST error codes.
- One or two short beeps.
- OS/2 Desktop or licensed internal code for Hardware Management Console fails to start.
- No reference code or any other error information displayed.

YES NO

↓ Go to step 5.

2

Use the diagnostics and procedure for the type of PC you are working on to isolate the failure and exchange FRUs.

Refer to 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **System Unit** problem area the test for **Run All Selected**.

When the test is complete, go to step 3.

3

Did the tests detect any errors?

NO YES

↓ Go to step 5.

4

Reload the licensed internal code on the hard drive using the procedure in 4.27.4, "Restore Hard Disk Information (Hardware Management Console)" on page 158 for a Hardware Management Console problem.

When the licensed internal code is restored, press and hold **Ctrl** and **Alt** together, then press **Delete (Ctrl+Alt+Delete)**.

- If the licensed internal code in the Hardware Management Console starts correctly the problem is resolved. Close the call using the procedure in 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If the failure still occurs call next level of support.

End of procedure.

5

Use the diagnostics and procedure for the type of PC you are working on to isolate the failure and exchange FRUs.

Refer to 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select the failing problem area. If the problem area is not known, select **System Unit** problem area and the test for **Run All Selected**.

When the problem is repaired, or, if the problem cannot be isolated, continue on step 6.

6

If you have not already done so, verify the repair. For instructions, see 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Make the appropriate selection for the unit under repair.

Note: If you were not able to isolate a failure, call the next level of support.

Did the tests run without errors?

NO YES

↓ Go to step 8.

7

Continue exchanging FRUs from the FRU list and testing with the diagnostic procedure until the problem is resolved.

Reinstall any FRUs that do not fix the problem.

When you resolve the problem, go to step 8.

If you cannot resolve the problem, call the next level of support.

8

Did you exchange the system board or the battery?

YES **NO**

↓ Go to step 10.

9

If you have not already done so, configure the system board. If you are repairing a Hardware Management Console, also verify the Token-Ring adapter configuration.

Note: You may have to reload the video device driver after the system board configuration procedure. For information, refer to 4.14.9.2, "Planar Exchange - Video Fix" on page 91.

System board:

- Refer to 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **System Unit** configuration area.

Token-Ring (Hardware Management Console):

- Refer to 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **Token-Ring** configuration area.

When configuration is complete, go to step 10.

10

Did you exchange an ISA SCSI adapter **and** the new adapter was a different type (Plug and Play/non-Plug and Play)?

YES NO

↓ Go to step 12.

Use the following information to help determine the SCSI adapter type:

- IBM AT Fast SCSI Adapter (Plug and Play) 16-bit
 - LED on the card edge
 - No configuration switches on the card
 - Possible ♦ – symbol near the card's external connector
 - Has terminating resistor module on the SCSI cable
 - IBM 16-bit AT Fast SCSI Adapter
 - No LED on the card edge
 - Configuration switches on the card
 - No symbol near the card's external connector
 - No terminating resistor module on the SCSI cable
-

11

Configure the system board so the SCSI and Token-Ring resources will not conflict. Refer to 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **System Unit** configuration area.

Configure the Token-Ring adapter so it will not conflict with the resources used by the SCSI adapter. Refer to 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **Token-Ring** configuration area.

When configuration is complete, go to step 12.

12

Did you exchange a Hardware Management Console feature card (ISA adapter)?

YES NO

↓ Go to step 14.

13

If you have not already done so, verify the ISA adapter's configuration. Refer to 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **ISA adapter** configuration area.

When configuration is complete, go to step 14.

End of procedure.

14

Did you exchange the hard disk drive?

YES NO

↓ Go to step 17.

15

If there are jumpers or tab settings on the new hard drive, ensure they are set the same as the old drive.

Refer to "Hard Disk Drive Jumper Settings" in *IBM Personal Computer Hardware Maintenance Manual*, S83G-7789.

When complete, go to step 16.

16

Load system information on the new hard disk. For instructions, refer to 4.27.4, "Restore Hard Disk Information (Hardware Management Console)" on page 158.

This step copies system licensed internal code and customization information to the new hard disk.

When hard disk recovery is complete, go to step 17.

17

Did you exchange the read/write optical drive?

YES NO

↓ Go to step 19.

18

Ensure the SCSI ID and Termination switch or jumper settings are set the same as the old drive. (See **Note**.)

When complete, go to step 19.

Note: Usually the read/write optical drive SCSI ID is set to 3. SCSI ID setting of 0 is also used with IBM 230 R/W opticals. Switch settings for the Fujitsu Read/Write Optical Drive Model M2512A22 (IBM part number 62G0546) are in 4.27.2, "Switch Settings for Fujitsu Read/Write Optical Drive" on page 156.

19

Use the instructions in 4.27.3, "Saving Hardware Management Console Configuration" on page 157 to create a backup cartridge for hard disk data.

When the backup is complete, go to step 20.

20

For the Hardware Management Console you were working on:

- Ensure there are no diskettes in the diskette drive.
- Power the system unit off.
- Power the system unit on.

Close the call. For information, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

End of procedure.

4.8 Hard Disk Errors for ISA Bus PCs

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_FIXED_DISK or when the customer reports a hard disk problem.

1

Test the hard disk using the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **Hard Disk** problem area.

Return to step 2 of this procedure when the test is complete.

2

Did the hard disk tests fail?

YES NO

↓ Go to step 7.

3

Exchange the FRUs called by the diagnostics one at a time. For FRU removal and replacement instructions, refer to the PC maintenance information.

When each FRU is exchanged, test the repair using the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **Hard Disk** problem area.

Did the hard disk tests fail?

NO YES

↓ call the next level of support

4

Did you exchange a hard disk drive?

YES NO

↓ Go to step 7.

5

If there are jumper or tab settings on the new hard disk, ensure they are the same as the old drive.

For procedures, refer to "Hard Disk Jumper Settings" in *IBM Personal Computer Hardware Maintenance Manual*, S83G-7789.

Go to step 6.

6

Restore the licensed internal code to the new hard disk. For instructions, see 4.27.4, “Restore Hard Disk Information (Hardware Management Console)” on page 158.

When complete, go to step 7.

7

Test using the procedure in 4.14, “Testing the Hardware Management Console for ISA Bus PCs” on page 76. Select **Run All Selected** problem area.

Note: If the tests do not fail or if you cannot isolate the problem, call the next level of support.

End of procedure.

- If the tests fail, use the procedures in the PC maintenance information to isolate the problem.
 - When complete, remove the diagnostics diskette.
 - Power the PC off.
 - Power the PC on.
 - Close the call, for instructions, see 4.28, “Close Solved Problems on Hardware Management Console” on page 164.
-

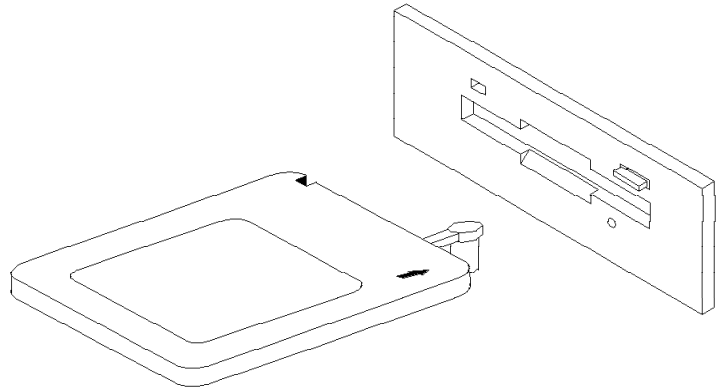
4.9 Read/Write Optical Drive Errors for ISA Bus PCs

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_RW_OPTICAL or xxxx_RW_OPTICAL_DRIVE or the customer reports a read/write optical drive problem on the Hardware Management Console.

1

Clean the sensor in the optical drive as follows:

- Remove the cartridge from the drive.
- Remove the cover over the brush on the optical cleaning card (38F8681 or 66G7444).
- Insert the optical cleaning card into the drive as shown.
- Remove the optical cleaning card and reinstall the original cartridge.



Go to step 2.

2

Retry the original task using the original cartridge.

Did the failure occur again?

YES NO

- ↓ Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

If you do not know what the original operation was or cannot run it, use the procedure under 4.27.3, "Saving Hardware Management Console Configuration" on page 157.

3

Retry the original task using a **new** cartridge. (See **Note**)

Did the failure occur again?

YES NO

- ↓ Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

Note: The new cartridge must be formatted before attempting to write on it. Use an OS/2 window and type `FORMAT x:` after the prompt where x is the drive identifier. The optical drive identifier is F: unless additional hard drives were added for special applications. If extra drives were added, the optical drive identifier is the **last** identifier assigned.

4

The optical drive is connected to an SCSI adapter. Test the SCSI adapter using the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **SCSI** under **ISA adapters** problem area.

Note: Use a new optical cartridge for the test.
Run both Adapter and Device tests from the Diagnostics Options window.

When the tests are complete, go to step 5 of this procedure.

Note: If you cannot start the SCSI adapter because of the optical drive failure, go to step 5 and answer the question "YES."

5

Did the SCSI adapter or device diagnostics fail?

Note: Answer "YES" if you were not able to run the tests because of errors.

YES NO

↓ Go to step 12.

6

Exchange the FRUs called by the diagnostics one at a time. For FRU removal and replacement procedures, refer to the PC maintenance information.

As each FRU is exchanged, test using the procedures in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **SCSI** under **ISA adapters** problem area.

Do the tests still fail?

NO YES

↓ call the next level of support.

For information on FRU removal and replacements, refer to the PC maintenance information.

7

Did you exchange an ISA SCSI adapter?

YES NO

↓ Go to step 10.

8

Was the new SCSI adapter a different type (Plug and Play/non-Plug and Play)?

YES NO

↓ Go to step 10.

Use the following information to help determine the SCSI adapter type:

- IBM AT Fast SCSI Adapter (Plug and Play) 16-bit
 - LED on the card edge
 - No configuration switches on the card
 - Possible ♦ – symbol near the card's external connector
 - Has terminating resistor module on the SCSI cable
 - IBM 16-bit AT Fast SCSI Adapter
 - No LED on the card edge
 - Configuration switches on the card
 - No symbol near the card's external connector
 - No terminating resistor module on the SCSI cable
-

9

Configure the system board so the SCSI and Token-Ring resources will not conflict. Refer to 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **System Unit** configuration area.

Configure the Token-Ring adapter so it will not conflict with the resources used by the SCSI adapter. Refer to 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **Token-Ring** configuration area.

When configuration is complete, go to step 10.

10

Did you exchange the optical disk drive?

YES NO

↓ Go to step 12.

11

Ensure that the SCSI ID and terminating resistor settings are the same as the old drive. (See **Note**.)

When complete, close the call. For instructions, see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

End of procedure.

Note: Usually the read/write optical drive SCSI ID is set to 3. The IBM 230 R/W optical ID is often set to 0. Switch settings for the Fujitsu Read/Write Optical Drive Model M2512A22 (IBM part number 62G0546) are in 4.27.2, "Switch Settings for Fujitsu Read/Write Optical Drive" on page 156.

12

Did the **original failure** occur while **writing** to a cartridge?

YES **NO**

↓ Go to step 14.

13

Retry the original task using a new cartridge.

- If the failure occurs again, go to step 15.
- If no failures occur, the original cartridge was defective. Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

The new cartridge must be formatted before attempting to write on it. Use an OS/2 window and type `FORMAT x:` after the prompt where x is the drive identifier. (The optical drive identifier is F: unless additional hard drives were added for special applications. If extra drives were added, the optical drive identifier is the **last** identifier assigned.)

If you do not know what the original operation was or cannot run it, use the procedure under 4.27.3, "Saving Hardware Management Console Configuration" on page 157.

14

Recreate the information on the cartridge or get a new cartridge with the information.

Retry the original task.

- If the failure occurs again, go to step 15.
 - If no failures occur close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
-

15

Exchange the optical drive.

Ensure that the SCSI ID and terminating resistor settings are the same as the old drive.

Retry the original task.

- If the failure occurs again, go to step 16.
 - If no failures occur close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
-

16

Use the procedure in 4.14, “Testing the Hardware Management Console for ISA Bus PCs” on page 76 to test the system unit. Select **System Unit** problem area and the test for **Run All Selected**.

- If the tests fail, use the procedures in the PC maintenance information to isolate the problem. When complete, close the call. For instructions, see 4.28, “Close Solved Problems on Hardware Management Console” on page 164.
 - If the tests do not fail or if you cannot isolate the problem, call the next level of support.
-

4.10 Diskette Errors for ISA Bus PCs

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_DISKETTE or xxxx_DISKETTE_DRIVE or the customer reports a diskette problem.

1

Test the diskette drive using the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **System Unit** for the problem area and the test for **Diskette Drive**.

Note: If you cannot start the test because of the diskette drive failure, go to step 2 and answer the question "YES."

Note: Do not test with the diskette on which the errors occurred. Use a new diskette.

When the test is complete, return to step 2 of this procedure.

2

Did the diskette tests fail while testing with the new diskette?

Note: Answer "YES" if you were not able to run the tests because of the diskette errors.

YES NO

↓ Go to step 5.

3

Exchange the diskette drive.

When complete, run the diskette tests again.

Did the diskette tests fail again?

YES NO

↓ Close the call. For instructions see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

For FRU removal and replacement procedures, refer to the PC maintenance information.

4

Continue exchanging FRUs from the FRU list and running tests. If the FRUs fix the problem, close the call. For information, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164. If you cannot resolve the problem, call the next level of support.

5

Did the **original failure** occur while **writing** to a diskette?

YES **NO**

↓ Go to step 7.

6

Retry the original task using a new diskette.

The new diskette must be formatted before attempting to write on it.

- If the failure occurs again, go to step 8.
 - If no failures occur, the original diskette was defective. Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
-

7

Recreate the information on the diskette or get a new diskette with the information.

Retry the original task.

- If the failure occurs again, go to step 8.
 - If no failures occur close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
-

8

Test using the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **System Unit** problem area and the test for **Run All Selected**.

- If the tests fail, follow the procedures in the PC maintenance information. When complete, close the call. For instructions, see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
 - If the tests do not fail or if you cannot isolate the problem, call the next level of support.
-

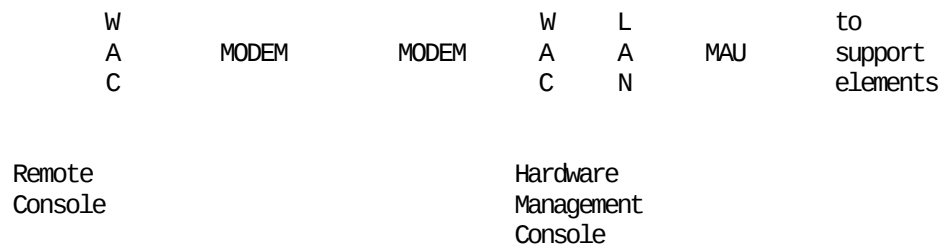
4.11 Remote Support/Remote Console Errors for ISA Bus PCs

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_COMM_ADAPTER, LOCAL_MODEM, or xxxx_MODEM_CABLE or when the customer reports a problem communicating with a remote console.

The telecommunications feature on the Hardware Management Console can be used to send service information to or retrieve licensed internal code fixes from the IBM Service Support system, or to connect to the customer’s remote console.

Service Tips: The Wide Area Connector may have two 15-pin connectors. If so, plug the modem cable into the connector with the **RS232** label next to it. (This is the connector nearest the end of the PC.)

The following picture shows how the telecommunications feature is connected.



1

Many telecommunications feature problems are caused by incorrect setup information.

Check the following at the Hardware Management Console:

- Authorize Remote Connections is selected and the remote customization information for all 9221 SPs is correct.
- Check the modem setup. For information, refer to 4.27.1, “Modem Settings” on page 154.

If the connection to the remote console is failing, have the customer verify that Communications Manager/2 and DCAF are correctly installed and configured on the remote console. For information, refer to “Remote Console Operations” in *Hardware Management Console Guide*, GC38-0453. Also ensure that the modem at the remote console end is set up correctly.

If a modem is disconnected, powered off, or has the setup changed **or** console configuration data is changed, restart the console.

To restart a console, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete (Alt+Ctrl+Delete)**.

2

Did you find a setup problem in step 1?

YES NO



Go to step 4.

Note: If you restarted the Hardware Management Console or remote console in the previous step, answer this question "YES."

3

Retry the failing operation.

- If the telecommunications feature works correctly now, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If the telecommunications feature still fails, go to step 4.

4

At the Hardware Management Console, test the Wide Area Connector adapter feature card and cable. Use the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **Wide Area Connector** under **ISA adapters** for the problem area.

When the test is complete, go to step 5 of this procedure.

The test requires wrap connector P/N 33G8474.

5

Did the Wide Area Connector adapter tests fail?

YES NO



Go to step 7.

6

Exchange the Wide Area Connector adapter feature card in the Hardware Management Console and the modem cable one at a time and rerun the tests to isolate the failure.

The test instructions will assist you in isolating cable failures.

- If you replace the driver, verify the replacement FRU's configuration. For information, refer to 4.14.3, "Configuration Procedures for PC based Hardware Management Consoles" on page 78.
 - When you complete the repair, restart the Hardware Management Console. When complete, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164
 - If you cannot isolate the problem, call the next level of support.
-

7

If an IBM modem is installed at the Hardware Management Console, use the procedures in the maintenance information for the modem to test the modem and the telecommunications network.

If the modem is not an IBM modem, ask the customer to have the modem and network tested.

When complete, go to step 8.

8

Did the modem or network tests fail?

YES NO

↓ Go to step 10.

9

If the tests indicate a failure in an IBM modem, use the maintenance information for the modem to repair it.

If the tests indicate a failure in a non-IBM modem or the network, have the customer request service.

When complete, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

10

Does the error occur while trying to communicate with a remote operator console?

YES NO

↓ Go to step 13.

11

If possible, have the customer or another service representative test the Wide Area Connector adapter feature and modem at the remote console.

- If it is not possible to have the tests run at the remote console, go to step 13.
 - Otherwise, when testing is complete, go to step 12.
-

12

Did the tests at the remote console fail?

NO YES

↓ Have the equipment at the remote location serviced. When complete, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

13

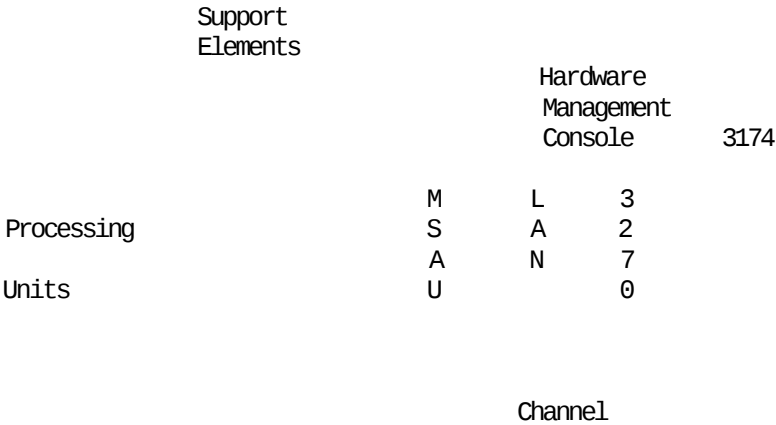
Test the Hardware Management Console using the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **System Unit** problem area and the test for **Run All Selected**.

- If the tests fail, follow the procedures in the PC maintenance information to isolate the problem. When complete, close the call. For instructions, see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
 - If the tests do not fail or if you cannot isolate the problem, call the next level of support.
-

4.12 3270 Feature Errors for ISA Bus PCs

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_3270_ADAPTER or xxxx_3270_CABLE or when no FRUs were detected but the customer reported a problem using the Hardware Management Console as the system console.

The 3270 emulator feature card in the Hardware Management Console connects a channel-attached 3174 (or equivalent). This allows the Hardware Management Console to also be used as an operator (system) console. The following picture shows how the 3270 emulator feature is connected.



1

At the Hardware Management Console, test the 3270 emulator feature card. Refer to 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **3278/79 Emulation Adapter** under the **ISA adapters** problem area.

When the test is complete, return to step 2 of this procedure.

2

Did the 3270 emulator feature tests fail?

YES NO

↓ Go to step 4.

3

Exchange the 3270 emulator feature card and the cable one at a time and rerun the tests to isolate the failure.

Note: Exchange the FRUs in the sequence listed in the FRU list for this problem.

- When you complete the repair, restart the Hardware Management Console. When complete, close the call. For instructions, refer to 4.28, “Close Solved Problems on Hardware Management Console” on page 164.
 - If you cannot isolate the problem, call the next level of support.
-

To restart the Hardware Management Console, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete** (**Alt+Ctrl+Delete**).

4

- Determine which 3174 or other workstation controller is connected to the Hardware Management Console and which port is used for the connection.
- Locate another terminal connected to the same workstation controller.

Note: The terminal must be a Control Unit Terminal (CUT) device; for example, a 3278 or 3279.

- Use the terminal to run a port wrap test to the port the Hardware Management Console is connected to as follows:
 - Press **Alt** and **Test** together. The test mode screen displays on the terminal.
 - Press **PF12**. The test menu displays on the terminal.
 - Type **10** (to select the port wrap test) and press **Enter**. The Port Wrap Test screen displays on the terminal.
 - Type **1**, followed by **,** (comma), followed by the port address of the Hardware Management Console, then press **Enter**. The Port Wrap Test runs.

Go to step 5.

5

Did the port wrap test fail?

YES NO

↓ Go to step 10.

A message on the Port Wrap Test window indicates the status of the test.

6

At the workstation controller connected to the Hardware Management Console, disconnect the cable to the Hardware Management Console.

Use the procedure in step 4 to run the port wrap test again.

When complete, go to step 7.

7

Did the port wrap test fail?

YES NO

↓ Go to step 9.

8

The failure is in the workstation controller connected to the Hardware Management Console.

Go to the workstation controller information to resolve the problem.

When you complete the repair, restart the Hardware Management Console. When reset is complete, close the call. For information, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

To restart the Hardware Management Console, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete** (**Alt+Ctrl+Delete**).

9

The failure is in the 3270 feature card or the cable from the Hardware Management Console.

Isolate the problem by exchanging the cable and feature card one at a time and rerunning the port wrap test.

When you complete the repair, restart the Hardware Management Console. When reset is complete, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

If you cannot find the problem, call the next level of support.

To restart the Hardware Management Console, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete** (**Alt+Ctrl+Delete**).

10

Has the 3270 feature worked correctly at some time before this problem was reported? (See **Note**.)

NO YES

↓ Go to step 12.

Note: If the feature was recently added to the system, there may be a configuration problem.

11

Have the customer check the configuration for the workstation controller.

If you find the problem, close the call. For instructions, refer to 4.28, “Close Solved Problems on Hardware Management Console” on page 164.

If you cannot find the problem, go to step 12.

12

Test the Hardware Management Console using the procedure in 4.14, “Testing the Hardware Management Console for ISA Bus PCs” on page 76. Select **System Unit** problem area and the test for **Run All Selected**.

- If the tests fail, follow the procedures in the PS/2 maintenance information to isolate the problem. When complete, close the call. For instructions, see 4.28, “Close Solved Problems on Hardware Management Console” on page 164.
 - If the tests do not fail or if you cannot isolate the problem, call the next level of support.
-

4.13 Display Problems for ISA Bus PCs

Use this procedure when the customer reports a display problem.

1

Is the display type a 9527 (17P, 17X) or 9521 (21P)?

NO YES

↓ 95xx-xxx repairs may require replacing internal display FRUs.

Repair and test the display using the procedures in *Monitor Hardware Maintenance Manual Vol 2*, S41G-3317.

When the test and repair are complete, return to step 4 of this procedure.

2

Is the display type a 6554 (P70) or 6555 (P200)?

NO YES

↓ 65xx-xxx repairs may require replacing the entire display. There are no internal FRUs.

Repair and test the display using the procedures in: *Monitor Hardware Maintenance Manual Vol 3, P and G series*, S52H-3679. **When the test and repair are complete, return to step 4 of this procedure.**

3

Repair and test the display using the documentation shipped with your display. **When the test and repair are complete, return to step 4 of this procedure.**

4

Verify the repair using the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **System Unit** for the problem area and the test for **Display**. **When the test and repair are complete, return to step 5 of this procedure.**

5

Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

4.14 Testing the Hardware Management Console for ISA Bus PCs

This section describes diagnostic and configuration for the Hardware Management Console.

Use the information in this section when you are directed to test the Hardware Management Console to isolate a problem or verify a repair.

PC maintenance procedures vary depending on PC type and model. Verify your PC type and model before attempting a repair.

4.14.1.1 Service Tips: Hardware Management Console

The Hardware Management Console (PC) uses Industry Standard Architecture (ISA) bus adapters. System Unit configuration is done manually using the Setup Utility stored in the computer's permanent memory. ISA adapters are configured either by a bootable diskette utility (Token-Ring) or jumpers and switches. Maintenance procedures are performed using one unique diskette for each installed adapter and one diskette for verifying system board operation, memory, and planar I/O functions.

For 9221 SPs, 16Mbps Token-Ring speed is the only value supported.

Diagnostic Procedures: Use Table 12 on page 77 if you are directed to run either adapter (ISA) or system unit (PC) diagnostics.

Configuration Procedures: Use Table 13 on page 78 if you are directed to configure or verify the configuration of an adapter (ISA) and/or system unit (PC).

4.14.2 Diagnostic Procedures for PC based Hardware Management Consoles

- Locate the area you are directed to test under **Problem Area**.
- Locate the diagnostic test procedures under **Go To**.

Note: If you are directed to **Run All Selected**, start with the **System Unit** diagnostic procedures for the unit (PC) you are repairing.

Problem Area	Go To
For Hardware Management Console Personal Computer: System Unit DASD Display Floppy Drive Keyboard Mouse Memory Power Run All Selected	4.14.5, "PC: System Unit Diagnostics" on page 80
Personal Computer: ISA Adapters Auto 16/4 Token-Ring	4.14.7, "PC: ISA Token-Ring Diagnostics" on page 83
Personal Computer: ISA Adapters Wide Area Connector	4.14.8, "PC: ISA Wide Area Connector" on page 85
Personal Computer: ISA Adapters 3278/79 Emulation AT Fast SCSI Adapter (Plug and Play) 16-bit AT Fast SCSI Adapter (Non-Plug and Play) 16-bit	4.14.6, "PC: ISA Adapter Diagnostics" on page 81

Table 12. Diagnostic Procedures for PC Based Hardware Management Consoles

4.14.3 Configuration Procedures for PC based Hardware Management Consoles

Use Table 13 if you are directed to verify the configuration of an adapter (ISA) or a system unit for a Hardware Management Console.

- Locate the type of system unit (PC) and the adapter you are configuring under **Configuration Area**.
- Go to the information displayed under **Go To**.

<i>Table 13. Configuration Procedures</i>	
Configuration Area	Go To
For Hardware Management Console 6885 Personal Computer: System Unit	4.14.9, "6885 PC Configuration" on page 87
For Hardware Management Console 6887 Personal Computer: System Unit	4.14.10, "6887 PC Configuration" on page 95
Personal Computer: ISA Adapters Token-Ring Other (for example, SCSI, 3270)	4.14.11, "Token-Ring Configuration" on page 101 4.14.12, "ISA Adapter Configuration" on page 103

4.14.4 Documentation and Diskettes

Note: The first entry under Hardware Management Console references System Unit procedures.

Hardware Management Console

Documentation	Diskette
<i>IBM Personal Computer Hardware Maintenance Manual, S83G-7789</i>	PC300 and 700 Series Diagnostics Diskette, 83G7787
<i>IBM 16-Bit AT Fast SCSI Adapter, User's Guide, 83G7480</i> <i>16-Bit AT Fast SCSI Adapter Option Diskette, User's Guide, 83G7483</i>	IBM 16-Bit AT Fast SCSI Adapter Option Diskette (83G7811)
<i>IBM AT Fast SCSI Adapter (Plug and Play) 16-bit User's Guide</i>	IBM AT Fast SCSI Adapter (Plug and Play) 16-bit Option Diskette
<i>Auto 16/4 Token-Ring ISA Adapter, Installation and Testing Instructions, 92G7637</i>	IBM Auto 16/4 Token-Ring ISA Adapter, Disk 1: LANAID, Version 1.4 or greater (07H7074)
<i>3270 Emulation Cards, Guide to Operations, GA27-3913</i>	IBM 3278/79 Emulation Adapter Diagnostics Diskette (33G2669)
<i>Wide Area Connector Installation and Testing Instructions, 33G8478</i>	Wide Area Connector Installation and Diagnostic Diskette, Version 2.21 or greater (07H7073)
<i>Monitor Maintenance Manual Vol 2, (Monitor Type 95xx), S71G-4197</i>	None
<i>Monitor Maintenance Manual Vol 3, P and G Series (Monitor Type 65xx), S52-H3679</i>	IBM PS/2 Color Displays Test Pattern Diskette (41G8502)

Table 14. Documentation and Diskettes - Hardware Management Console

4.14.5 PC: System Unit Diagnostics

Note: Most diagnostic diskettes are bootable. Performing operations other than those specified in the following procedure may cause errors.

1

Locate the corresponding documentation and diskette for the PC you are testing. Refer to 4.14.4, "Documentation and Diskettes" on page 79.

Run the Advanced Diagnostics using the procedure described in *IBM PC Hardware Maintenance Manual*, "General Checkout."

2

On the Diagnostics Menu window:

- Select **Module Tests**
 - Press **Enter**
-

3

On the Module Tests Menu window:

- Select the test you were instructed to run
- Follow the instructions on the windows to run the test

Note: If you were instructed to **Run All Selected** use the space bar to ensure all tests displayed on the Module Tests Menu Window are selected.

Use **F1** help function for additional information

4

If you replaced the system board or battery and you have not been previously directed to configure the Personal Computer System Unit and Token-Ring ISA Adapter, do so now. Refer to 4.14.3, "Configuration Procedures for PC based Hardware Management Consoles" on page 78.

5

If you were instructed to **Run All Selected** then continue with 4.14.2, "Diagnostic Procedures for PC based Hardware Management Consoles" on page 77 and select **ISA Adapters**. Otherwise, return to the procedure that directed you here.

4.14.6 PC: ISA Adapter Diagnostics

Use this procedure to test the following ISA adapters:

IBM AT Fast SCSI Adapter (Plug and Play) 16-Bit
 IBM 16-Bit AT Fast SCSI Adapter (Non-Plug and Play)
 3278/79 Emulation

Use the following information to help determine the SCSI adapter type (Plug and Play or non-Plug and Play) being tested:

- IBM AT Fast SCSI Adapter (Plug and Play) 16-bit
 - LED on the card edge
 - No configuration switches on the card
 - Possible ♦ – symbol near the card's external connector
 - Has terminating resistor module on the SCSI cable
- IBM 16-bit AT Fast SCSI Adapter
 - No LED on the card edge
 - Configuration switches on the card
 - No symbol near the card's external connector
 - No terminating resistor module on the SCSI cable

Note: For IBM Auto 16/4 Token-Ring diagnostics, see 4.14.7, "PC: ISA Token-Ring Diagnostics" on page 83.

For IBM Wide Area Connector diagnostics, see 4.14.8, "PC: ISA Wide Area Connector" on page 85.

Most diagnostic diskettes are bootable. Performing tasks other than those specified in the following procedures may cause errors.

The Hardware Management Console may contain adapters installed by the customer. Get the customer's help in testing these adapters if you suspect they are causing the failure.

1

Locate the corresponding service manual and diskette for the ISA Adapter you are testing. Refer to 4.14.4, "Documentation and Diskettes" on page 79.

2

Run only the diagnostic test for the ISA adapter you are verifying.

Performing tasks other than diagnostic (that is, software installation) will cause errors.

3

If you replaced an adapter and you have not been previously directed to verify the replacement FRU's configuration, do so now. Refer to 4.14.3, "Configuration Procedures for PC based Hardware Management Consoles" on page 78.

4

If you were instructed to **Run All Selected** then test all the ISA adapters in the list, one at a time. Otherwise, return to the procedure that directed you here.

4.14.7 PC: ISA Token-Ring Diagnostics

Use this procedure to test the IBM Auto 16/4 Token-Ring ISA adapters.

Note: Most diagnostic diskettes are bootable. Performing tasks other than those specified in the following procedures may cause errors.

The Hardware Management Console may contain adapters installed by the customer. Get the customer's help in testing these adapters if you suspect they are causing the failure.

1

If you were directed to disconnect the Token-Ring adapter cable, do it now.

Locate the corresponding service manual and diskette for the Token-Ring adapter. Refer to 4.14.4, "Documentation and Diskettes" on page 79.

2

If requested by the diagnostic routine, use the following selections:

For assistance, select Help or refer to 4.14.4, "Documentation and Diskettes" on page 79.

- Startup Menu: **Extended Diagnostics**
-

3

Did the diagnostics indicate a failure?

YES NO

↓ Go to step 8.

4

Were you directed to disconnect the Token-Ring adapter cable at the MAU?

YES NO

↓ Go to step 8.

5

Select **Retest** to test the cable and adapter in wrap mode. When complete, go to step 6.

6

Did the tests indicate a failure?

NO YES

↓ Go to step 8.

7

The tests ran successfully for the LAN configuration requested.

Answer the “Did diagnostics fail” question **No**.

Go to step 8.

8

If you were instructed to “Run all selected,” continue testing the remaining ISA adapters. For information, refer to 4.14.6, “PC: ISA Adapter Diagnostics” on page 81.

Otherwise, return to the procedure that directed you here.

End of procedure.

4.14.8 PC: ISA Wide Area Connector

Use this procedure to test the IBM Wide Area Connector (WAC) ISA adapters.

Note: Most diagnostic diskettes are bootable. Performing tasks other than those specified in the following procedures may cause errors.

The WAC diagnostics require a wrap plug (33G8474).

1

Locate the corresponding service manual and diskette for the ISA Adapter you are testing. Refer to 4.14.4, "Documentation and Diskettes" on page 79.

2

If directed by the service manual, disconnect the modem cable from the modem and connect the wrap plug to the end of the cable. Ensure the cable is connected to the WAC adapter at the D-shell connector labelled "RS-232."

3

If directed by the diagnostic routine, use the selections in the right hand column. Refer to the WAC documentation for assistance.

Wide Area Test Control:	Run tests one time
Instructions Window:	Enter

4

On the Questions window, verify the following:

- For Adapter (1) of (1)
- EIB IDs (A: RS-232-D, B: No EIB)
- RAM Window (0D0000-0D3FFFF = 16K)
- I/O Addresses (120-13F)
- Interrupt Level (5)

Use the Adapter Select and Test Control window to select test values.

5

If directed by the diagnostic routine, use the selections in the right hand column. Refer to the WAC documentation for assistance.

Run (All) Tests for Links (A)	Y
-------------------------------	---

If the tests run without errors a "Successful Completion" message displays for a short time.

6

If you were instructed to "Run all selected," continue testing the remaining ISA adapters. Otherwise, return to the procedure that directed you here.

4.14.9 6885 PC Configuration

Hardware Management Console configuration must be verified if:

- the battery or system board is replaced
- the SCSI adapter is replaced with one of a different type (plug and play/non-plug and play)

1

Invoke the Setup Utility Program. For additional information refer to “Setup Utility Program” in *IBM Personal Computer Hardware Maintenance Manual*, S83G-7789.

2

Verify the configuration values listed under 4.14.9.1, “6885 Configuration Settings”

Note: System Summary items marked by an “*” are PC model and type dependent. Values are shown for a 6885-45J.

You may have to reload the video device driver after the system board configuration procedure. For information, refer to 4.14.9.2, “Planar Exchange - Video Fix” on page 91.

4.14.9.1 6885 Configuration Settings
System Summary

* Processor	Pentium
* Processor Speed	90 Mhz
* Math Coprocessor	Internal
System Memory	640KB
Extended Memory	23MB
* Video Controller	S3 Incorporated. Vision864
* Cache Size	256KB
* Shadow RAM	384KB
* System ROM	F000h - FFFFh
Memory Type	Parity
Diskette Drive A:	1.44MB 3.5†
* Hard Disk Drive 0	540MB
Mouse	Installed

Product Data

* Machine Type/Model:	688545J
* Flash ROM Revision Level:	N1TK65AUS (or later)
* System Board Identifier:	B16AL653159
* System Serial Number:	23TST22
* BIOS Date:	05/19/95 (or later)

Devices and I/O Ports

Serial Port A Address	3F8h-IRQ4
Serial Port B Address	2F8h-IRQ3
Parallel Port	3BCh-IRQ7
Parallel Port Mode	Standard
Parallel Port Extended Mode	†blank†
Mouse	Installed
Diskette Drive A:	Installed

Video Setup (9527-011 (17P) or 9521-001 (21P) Displays)

Video Display Type	IBM9527 (or 9521)
DDCI Monitor Checking	Disabled

Video Setup (6554-603 (P70) or 6555-703 (P200) Displays)

Video Display Type	XXXXXXX-DDCI
DDCI Monitor Checking	Enabled

Note: The video display type is already set to:
 IBM 6554-DDCI (P70)
 IBM 6555-DDCI (P200)

IDE Drives Setup

* Hard Disk Drive 0	Size:	540MB
	IDE Performance:	High Performance

Audio Setup (Note order)

Play DMA and Capture DMA	Disabled
Interrupt	Disabled
Port Address	Disabled

Date and Time

Time	hh:mm:ss
Date	mm dd yy

System Security

Secure Hard Disk Drives and Diskette Drives	(all enabled)
Power On Password	(customer sets)
System Administrator Password	(customer sets)

Start Options

Keyboard Numlock State	Off
Keyboard Speed	Fast
Disketteless Operation	Disabled
Monitorless Operation	Disabled
Keyboardless Operation	Disabled
First Startup Device	Diskette Drive 0
Second Startup Device	Hard Disk 0
Third Startup Device	Disabled
Power On Self Test	Enhanced
Virus Detection	Disabled

Advanced Setup

Cache Control	
Cache State	Enabled
* Cache Size	256KB
ROM Shadowing	
F0000h - FFFFFh	Enabled
E8000h - EFFFFh	Enabled
E0000h - E7FFFh	Enabled
D8000h - DFFFFh	Disabled
D0000h - D7FFFh	Disabled
C8000h - CFFFFh	Disabled
C0000h - C7FFFh	Enabled

ISA Legacy Resources

Note: Legacy resource values are dependent on the installed adapters. Token-Ring may be dependent on the SCSI adapter in use. Review 4.14.11, "Token-Ring Configuration" on page 101 if you are replacing an SCSI adapter.

If the SCSI adapter is an IBM AT Fast SCSI Adapter (Plug and Play) 16-bit:

- LED on the card edge
- No configuration switches on the card
- Possible ♦ – symbol near the card's external connector
- Has terminating resistor module on the SCSI cable

use the legacy resources in "Legacy Resources (Plug and Play SCSI Adapter)" on page 90.

If the SCSI adapter is an IBM 16-bit AT Fast SCSI Adapter:

- No LED on the card edge
- Configuration switches on the card
- No symbol near the card's external connector
- No terminating resistor module on the SCSI cable

use the legacy resources in "Legacy Resources (Non-Plug and Play SCSI Adapter)."

Legacy Resources (Non-Plug and Play SCSI Adapter)

Note: Ensure all locations are set to "Available" unless:

- Marked "Allocated by the system" or "System Resource"
- Customer installed features (see the customer)
- Exceptions listed below

Memory Resources

Set to Not Available:	CA000h - CBFFFh	(reserved for SCSI)
	CE000h - CFFFFh	(reserved for 3270)
	D0000h - D1FFFh	(reserved for WAC)
	D2000h - D3FFFh	(reserved for WAC)

I/O Port Resources

Set to Not Available:	120h - 123h	(reserved for WAC)
	124h - 127h	(reserved for WAC)
	128h - 12Bh	(reserved for WAC)
	12Ch - 12Fh	(reserved for WAC)
	130h - 133h	(reserved for WAC)
	134h - 137h	(reserved for WAC)
	138h - 13Bh	(reserved for WAC)
	13Ch - 13Fh	(reserved for WAC)
	140h - 143h	(reserved for SCSI)
	144h - 147h	(reserved for SCSI)
	148h - 14Bh	(reserved for SCSI)
	14Ch - 14Fh	(reserved for SCSI)
	2D0h - 2D3h	(reserved for 3270)
	2D4h - 2D7h	(reserved for 3270)
	2D8h - 2DBh	(reserved for 3270)
	2DCh - 2DFh	(reserved for 3270)

DMA Resources

Channels 0 - 7 set to Available

Interrupt Resources

Set to Not Available:	5	(reserved for WAC)
	9	(reserved for 3270)
	10	(reserved for SCSI)

Legacy Resources (Plug and Play SCSI Adapter)

Note: Ensure all locations are set to "Available" unless:

- Marked "Allocated by the system" or "System Resource"
- Customer installed features (see the customer)
- Exceptions listed below

Memory Resources

Set to Not Available:	CE000h - CFFFFh	(reserved for 3270)
	D0000h - D1FFFh	(reserved for WAC)
	D2000h - D3FFFh	(reserved for WAC)
	DA000h - DBFFFh	(reserved for Token-Ring)
	DC000h - DDFFFh	(reserved for Token-Ring)
	DE000h - DFFFFh	(reserved for Token-Ring)

I/O Port Resources

Set to Not Available:

120h - 123h	(reserved for WAC)
124h - 127h	(reserved for WAC)
128h - 12Bh	(reserved for WAC)
12Ch - 12Fh	(reserved for WAC)
130h - 133h	(reserved for WAC)
134h - 137h	(reserved for WAC)
138h - 13Bh	(reserved for WAC)
13Ch - 13Fh	(reserved for WAC)
2D0h - 2D3h	(reserved for 3270)
2D4h - 2D7h	(reserved for 3270)
2D8h - 2DBh	(reserved for 3270)
2DCh - 2DFh	(reserved for 3270)

DMA Resources

Channels 0 - 7 set to Available
Except Channel 2

Interrupt Resources

Set to Not Available:

5	(reserved for WAC)
9	(reserved for 3270)

Rapid Resume

APM BIOS Mode: Disabled

4.14.9.2 Planar Exchange - Video Fix

Use this procedure only if you have **ALL** of the following:

- Hardware Management Console type and model: 6885-45x (750-P90)
- System Planar Board was exchanged
- Original planar was S3 Vision 864 (86C864) Video Chip

Note: This chip is located on the planar board near the display socket.

- Replacement planar uses S3 Vision 868 (86C868) Video Chip (or other non-864 chip)
- System Configuration (Cold Boot, Option F1) completed successfully
- Failure symptom: Desktop fails to display. Either blank display or blank display with cursor in upper left-hand corner.

Failure explanation

6885-45x video subsystem uses combinations of S3-864 or S3-868 video chips and S3 or Thompson DACs. Replacement planars whose video chips do not exactly match the originals, must have the OS/2 video device drivers reloaded to support the new video hardware.

6885-R8H does not have this problem. The planar board used is unique to this type/model and the video subsystem is consistent for all 6885-R8H planars.

Solution

Reload S3 OS/2 Warp video device drivers using disk images from one of the following:

- From a VM sign-on (preferred source):
TOOLCAT OS2CSD (IBM Internal)
Package name: S3_864
- From the PC Company's Web site (if VM is not available):

ftp://ftp.pcco.ibm.com/pub/pccbbs/ibm_pc300-700

S3 864/868 video driver for OS/2 1 of 2 (n71102a.exe)

S3 864/868 video driver for OS/2 2 of 2 (n71202a.exe)

Use the procedure in "Installing S3 Video Device Drivers for OS/2 Warp" to install the drivers.

Note: If you do not have the S3 driver diskettes available, you may restore Hardware Management Console functions by loading the VGA video device drivers during OS/2 initialization. The S3 drivers may be loaded at a later time. To load the VGA video device drivers, use the following procedure:

1. Power off the Hardware Management Console
2. Power on the Hardware Management Console

Note: What to look for when PC is powered on. After the memory count, the screen will momentarily blank then in the upper left hand corner a rectangular box followed by **OS/2** displays. When **OS/2** displays: Press and hold **Alt** then press **F1 (Alt+F1)**

3. Press **Alt+F1** when the rectangular box followed by OS/2 is displayed in the upper left hand corner.
4. If the Recovery Choices window is not displayed, reboot **Ctrl+Alt+Del** the PC and start again.
5. When the Recovery Choices window displays, press **V**. The PC will reboot and load VGA video device drivers.

The Hardware Management Console can now be used by the customer until the S3 video drivers are available.

Installing S3 Video Device Drivers for OS/2 Warp: You must have two OS/2 S3 device drivers diskettes:

Install Disk 1
Disk 2

1. Open an OS/2 window or full screen session and insert Disk 1
2. At the OS/2 prompt type: **A:SETUP A: C:** and press **Enter**.
3. When prompted, remove the diskette, perform a shutdown, and reboot the Hardware Management Console (**Alt+Ctrl+Delete**).
4. Open the OS/2 System folder
5. Open the System Setup folder
6. Open Display Driver Install

Note: Scroll the screen if the ICON is not immediately visible

7. From the Display Driver Install window, select: **Primary Display**, then **OK**

8. From the Primary Display Driver List window, select: **S3 864, S3 868 (32 Bit) (IBM BBS)**, then **OK**
9. From the Monitor Configuration/Selection Utility window, select: **Install Using Defaults for Monitor Type**, then **OK**
10. From the Source Directory window, select: **Install**
11. From the Insert Diskette window, insert the second diskette and select **OK**
12. From the Display Driver Install window, select **OK**
13. Remove the second diskette
14. Close the System Setup and OS/2 System windows
15. Shut down the PC. For information, refer to 3.3, "Stopping the Hardware Management Console" on page 33
16. Reboot the PC (**Alt+Ctrl+Delete**)

Adjusting Video Setup to Match Display

1. Open the OS/2 System folder
2. Open the System Setup folder
3. Open **System**

Note: This opens the SYSTEM - Settings window. Depending on your display type (655x vs 952x), screen resolution, refresh rate, and display name will be configured.

4. Select one of the following to adjust for your display type:

- If your display is a P70 or P200 (655x):
 - On the Screen Resolution window, (Page 1 of 2) select: **1024x768x256**
 - Close the windows you opened and shut down the PC. For information, refer to 3.3, “Stopping the Hardware Management Console” on page 33
 - Reboot the PC (**Alt+Ctrl+Delete**)
 - **Save the new configuration. For information, refer to 4.27.3, “Saving Hardware Management Console Configuration” on page 157.**
- If your display is a 17P,17X (9527) or 21P (9521):
 - On the Screen Resolution box (1 of 2), select: **1024x768x256**
 - On (Page 2 of 2) in the Display Name box, select: **IBM 17P, 17X, or 21P** from the display list
 - Close the System - Settings window
 - On the SVGA window, select: **YES**
 - Close the windows you opened
 - Shut down the PC. For information, refer to 3.3, “Stopping the Hardware Management Console” on page 33
 - Reboot the PC (**Alt+Ctrl+Delete**)
 - Open the OS/2 System folder, then open the System Setup folder
 - On (Page 1 of 2), from the Screen Refresh Rate box, select: 75
 - Close the windows you opened
 - Shut down the PC. For information, refer to 3.3, “Stopping the Hardware Management Console” on page 33
 - Reboot the PC (**Alt+Ctrl+Delete**)

Note: Use the display controls to re-adjust the image if necessary

The video driver installation process changed several files which are selected by the “Backup Critical Data” process.

 - **Save the new configuration. For information, refer to 4.27.3, “Saving Hardware Management Console Configuration” on page 157.**

4.14.10 6887 PC Configuration

Hardware Management Console configuration must be verified if:

- the battery or system board is replaced
- The SCSI adapter is replaced with a different type (Plug and Play vs non-plug and play)

1

Invoke the "Setup Utility Program." For information, refer to: "Setup Utility Program" in *IBM Personal Computer Hardware Maintenance Manual*, S83G-7798.

2

Verify the configuration values using the list in 4.14.10.1, "6887 Configuration Settings."

When complete, verify Token-Ring adapter configuration. Refer to 4.14.11, "Token-Ring Configuration" on page 101.

4.14.10.1 6887 Configuration Settings

System Summary

* Processor	Pentium
* Processor Speed	100 Mhz
* Math Coprocessor	Internal
System Memory	640KB
Extended Memory	23MB
* Video Controller	S3 Incorporated. Trio64V+
* Cache Size	256KB
* Shadow RAM	384KB
* System ROM	F000h - FFFFh
Memory Type	Parity
Diskette Drive A:	1.44MB 3.5†
* Hard Disk Drive 0	1281MB
Mouse	Installed

Product Data

* Machine Type/Model:	6887xxx
* Flash ROM Revision Level:	LQKT31AUS (or later)
* System Board Identifier:	B16AL653159
* System Serial Number:	23TST22
* BIOS Date:	01/29/96 (or later)

Note: Flash BIOS release levels are upgraded on a continual basis.

"LQKT31AUS" was the first Hardware Management Console release for this PC "TYPE" and may be upgraded to a higher level. If your Flash BIOS is at a higher level, do not "downgrade" to 31A. The latest level at the release of this document is 40A.

Devices and I/O Ports

Mouse	Installed
Diskette Drive A:	1.44MB 3.5 inch

Serial Port Setup

Serial Port A Address	3F8h
Serial Port A IRQ	IRQ 4
Serial Port Address	2F8h
Serial Port B IRQ	IRQ 3
Infra Red Support	Disabled
Infra Red DMA	Disabled

Parallel Port Setup

Parallel Port Address	3BCh-IRQ 7
Parallel Port Mode	Standard
Parallel Port Extended Mode	†blank†
Parallel Port Extended DMA	No DMA
Parallel Port IRQ	IRQ 7

Video Setup (6554-6x3 (P70) or 6555-7x3 (P200) Displays)

* Video Controller	S3 Inc. Trio64V+
* Video Controller	2048KB
DDC Monitor Checking	Enabled
Video Interrupt	Disabled

Video Display Type	IBM 65xx-DDC
--------------------	--------------

Note: The Video Display type may already be set to:

IBM 6554-DDC	(P70)
IBM 6555-DDC	(P200)

IDE Drives Setup

* Hard Disk Drive 0	
Size:	1281MB
IDE Performance:	High Performance
IDE Read Prefetch	Disable
* Hard Disk Drive 1	
Size:	Not Installed
* CD-ROM Drive 2	
Size:	Installed
IDE Performance:	High Performance
* Hard Disk Drive 3	
Size:	Not Installed

Date and Time

Time	hh:mm:ss
Date	mm dd yy

System Security

Secure Hard Disk Drives and Diskette Drives	(all enabled)
Power On Password	(customer sets)
System Administrator Password	(customer sets)

Start Options

Keyboard NumLock State	Off
Keyboard Speed	Fast
Disketteless Operation	Disabled
Monitorless Operation	Disabled
Keyboardless Operation	Disabled
First Startup Device	Diskette Drive 0
Second Startup Device	Hard Disk 0
Third Startup Device	Disabled
Fourth Startup Device	Disabled
Power On Self Test	Enhanced
Power On Logos	Enabled
Power On F1/ESC Options	Enabled
Virus Detection	Disabled

Advanced Setup

Cache Control	
Cache State	Enabled
* Cache Size	256KB
ROM Shadowing	
F0000h - FFFFFh (System BIOS)	Enabled
E8000h - EFFFFh	Enabled
E0000h - E7FFFh	Enabled
DC000h - DFFFFh	Disabled
D8000h - DBFFFh	Disabled
D4000h - D7FFFh	Disabled
D0000h - D3FFFh	Disabled
CC000h - CFFFFh	Disabled
C8000h - C7FFFh	Disabled
C0000h - C7FFFh (Video BIOS)	Enabled

PCI Control

PCI Burst Mode	Enabled
----------------	---------

Plug and Play Control

Set Device Mode	Enabled
-----------------	---------

ISA Legacy Resources

Note: Legacy resource values are dependent on the installed adapters. Token-Ring may be dependent on the SCSI adapter in use. Review 4.14.11, “Token-Ring Configuration” on page 101 if you are replacing an SCSI adapter.

If the SCSI adapter is an IBM AT Fast SCSI Adapter (Plug and Play) 16-bit:

- LED on the card edge
- No configuration switches on the card
- Possible ♦ – symbol near the card’s external connector
- Has terminating resistor module on the SCSI cable

use the legacy resources in “Legacy Resources (Plug and Play SCSI Adapter)” on page 99.

If the SCSI adapter is an IBM 16-bit AT Fast SCSI Adapter:

- No LED on the card edge
- Configuration switches on the card
- No symbol near the card’s external connector
- No terminating resistor module on the SCSI cable

use the legacy resources in “Legacy Resources (Non-Plug and Play SCSI Adapter).”

Legacy Resources (Non-Plug and Play SCSI Adapter)

Note: Ensure all locations are set to “Available” unless:

- Marked “Allocated by the system” or “System Resource”
- Customer installed features (see the customer)
- Exceptions listed below

Memory Resources

Set to Not Available:	CA000h - CBFFFh	(reserved for SCSI)
	CE000h - CFFFFh	(reserved for 3270)
	D0000h - D1FFFh	(reserved for WAC)
	D2000h - D3FFFh	(reserved for WAC)

I/O Port Resources

Set to Not Available:	120h - 123h	(reserved for WAC)
	124h - 127h	(reserved for WAC)
	128h - 12Bh	(reserved for WAC)
	12Ch - 12Fh	(reserved for WAC)
	130h - 133h	(reserved for WAC)
	134h - 137h	(reserved for WAC)
	138h - 13Bh	(reserved for WAC)
	13Ch - 13Fh	(reserved for WAC)
	140h - 143h	(reserved for SCSI)
	144h - 147h	(reserved for SCSI)
	148h - 14Bh	(reserved for SCSI)
	14Ch - 14Fh	(reserved for SCSI)
	2D0h - 2D3h	(reserved for 3270)
	2D4h - 2D7h	(reserved for 3270)
	2D8h - 2DBh	(reserved for 3270)
	2DCh - 2DFh	(reserved for 3270)

DMA Resources

Channels 0 - 7 set to Available
 Except Channel 2

Interrupt Resources

Set to Not Available: 5 (reserved for WAC)
 9 (reserved for 3270)
 10 (reserved for SCSI)

Legacy Resources (Plug and Play SCSI Adapter)

Note: Ensure all locations are set to "Available" unless:

- Marked "Allocated by the system" or "System Resource"
- Customer installed features (see the customer)
- Exceptions listed below

Memory Resources

Set to Not Available: CE000h - CFFFFh (reserved for 3270)
 D0000h - D1FFFh (reserved for WAC)
 D2000h - D3FFFh (reserved for WAC)

I/O Port Resources

Set to Not Available: 120h - 123h (reserved for WAC)
 124h - 127h (reserved for WAC)
 128h - 12Bh (reserved for WAC)
 12Ch - 12Fh (reserved for WAC)

 130h - 133h (reserved for WAC)
 134h - 137h (reserved for WAC)
 138h - 13Bh (reserved for WAC)
 13Ch - 13Fh (reserved for WAC)

 2D0h - 2D3h (reserved for 3270)
 2D4h - 2D7h (reserved for 3270)
 2D8h - 2DBh (reserved for 3270)
 2DCh - 2DFh (reserved for 3270)

DMA Resources

Channels 0 - 7 set to Available
 Except Channel 2

Interrupt Resources

Set to Not Available: 5 (reserved for WAC)
 9 (reserved for 3270)

Advanced Power Management

APM BIOS Mode:	Disabled
Automatic Hardware Power Management	
Automatic Hardware Power Management	Disabled
Activity Monitor	
All Selections:	Disabled
Automatic Power On	
All Selections:	Disabled
LAN Wake Up	
LAN Wake Up Detect	Disabled

4.14.11 Token-Ring Configuration

- Note:** Most ISA Adapter diskettes are bootable. Performing operations other than those specified in the following procedure may cause errors. The Token-Ring adapter configuration must be verified if:
- the adapter is replaced.
 - the SCSI adapter is replaced with a different type (plug and play vs non-plug and play)

1

Locate the documentation and diskette for the ISA Adapter you are configuring. Refer to 4.14.4, "Documentation and Diskettes" on page 79.

2

Token-Ring configuration is dependent on the SCSI card type (plug and play vs non-plug and play). Use the following information to help determine the SCSI adapter type:

IBM AT Fast SCSI Adapter (Plug and Play) 16-bit

- LED on the card edge
- No configuration switches on the card
- Possible ♦ – symbol near the card’s external connector
- Has terminating resistor module on the SCSI cable

IBM 16-bit AT Fast SCSI Adapter (non-plug and play)

- No LED on the card edge
- Configuration switches on the card
- No symbol near the card’s external connector
- No terminating resistor module on the SCSI cable

Is the SCSI adapter an IBM 16-bit AT Fast SCSI Adapter (non-plug and play)?

YES NO

↓ Go to step 5.

3

If requested by the configuration routine, use the selections in the right hand column. Select "Help" or refer to the adapter’s documentation for assistance.

Startup Menu:	†Configuration Using LANAI†
Warning Message:	†Enter†
Installation Options:	†Standard Install†
Std. Inst. Options:	†Configuration†

4

Verify the configuration parameters in the right hand column.

Note: Setting the LAN configuration to incorrect values may cause errors.

When complete, go to step 8.

Select:	PnP Configuration
Select:	Lock Current Resources
Interrupt	11
I/O Address	A20-A23 (Primary)
ROM Address	0DA000-0DBFFF
RAM Address	0DC000-0DFFFF
RAM Size	16KB
Auto Sense	Disabled
Data Rate	16Mbps
Remote IPL	Disabled
Bus Width	16 bit

5

If requested by the configuration routine, use the selections in the right hand column. Select "Help" or refer to the adapter's documentation for assistance.

Startup Menu:	†Configuration Using LANAIID†
Warning Message:	†Enter†
Installation Options:	†Standard Install†
Std. Inst. Options:	†Configuration†

6**Service Tip**

- Setting the LAN configuration to incorrect values may cause errors.
- Select "Lock Current Resources" so that Interrupt, ROM/RAM Address, I/O Address, and RAM Size may be specified. Then, deselect "Lock Current Resources" and select "Store."

Select the parameters in the right hand column.

When complete, go to step 7.

Select:	PnP Configuration
Select:	Lock Current Resources
Interrupt	10
I/O Address	A20-A23 (Primary)
ROM Address	0DA000-0DBFFF
RAM Address	0DC000-0DFFFF
RAM Size	16KB
Auto Sense	Disabled
Data Rate	16Mbps
Remote IPL	Disabled
Bus Width	16 bit

7

After the configuration values are set, deselect "Lock Current Resources."

8

Store the configuration values. You must power the PC off, then back on to activate the changes.

Return to the procedure that directed you here.

4.14.12 ISA Adapter Configuration

The following ISA Adapters are configured by switch and/or jumpers. Their configuration is not changed if the system board or battery are replaced.

- IBM 16-Bit AT Fast SCSI Adapter (non-Plug and Play)
- IBM 3278/79 Emulation Adapter
- Wide Area Connector Adapter

The IBM AT Fast SCSI Adapter (Plug and Play) 16-bit ISA adapter is plug and play. It is configured during PC initialization. Configuration and resource conflicts may occur if the "Configuration/Setup: Legacy Resources" is not correct.

The PC has been configured so that default ISA adapter switches and jumper settings can be used. Ensure the new card switch/jumper settings match the card you have replaced.

1

Locate the corresponding documentation for the ISA Adapter you are configuring. Refer to 4.14.4, "Documentation and Diskettes" on page 79.

2

Verify the configuration values for the ISA adapter you have replaced.

Note: Token-Ring adapter configuration may be dependent on the SCSI adapter in use. Review 4.14.11, "Token-Ring Configuration" on page 101 if you are replacing an SCSI adapter and the new SCSI is of a different type (plug and play vs non-plug and play).

If the SCSI adapter is IBM AT Fast SCSI Adapter (Plug and Play) 16-bit, no configuration settings are necessary. The adapter will use available system resources.

Note: The SCSI cable used with the Plug and Play adapter may contain a terminating resistor module at the end of the cable. If this module is present, the Read/Write Optical drive's terminating resistor must be disabled.

- For IBM drives: Refer to the label on the cable.
- For Fujitsu drives: Refer to 4.27.2, "Switch Settings for Fujitsu Read/Write Optical Drive" on page 156.

If the SCSI adapter is an IBM 16-bit AT Fast SCSI Adapter (non-Plug and Play), use switch settings supporting the following attributes:

Interrupt Setting: IRQ = 10
Memory Setting: MEM = CA00 (hex)
I/O Address: I/O = 140 (hex)

Note: The SCSI cable used with the non-Plug and Play adapter does not contain a terminating resistor module at the end of the cable. The Read/Write Optical drive's terminating resistor must be enabled.

- For IBM drives: Refer to the label on the cable.
- For Fujitsu drives: Refer to 4.27.2, "Switch Settings for Fujitsu Read/Write Optical Drive" on page 156.

Adapter Identification:

IBM AT Fast SCSI Adapter (Plug and Play) 16-bit

- LED on the card edge
- No configuration switches on the card
- Possible ♦ – symbol near the card's external connector
- Has terminating resistor module on the SCSI cable

IBM 16-bit AT Fast SCSI Adapter (non-Plug and Play)

- No LED on the card edge
 - Configuration switches on the card
 - No ♦ – symbol
-

3

IBM 3278/79 Emulation Adapter

Use jumper settings supporting the following attributes:

First Card

Operates in any slot other than 8.

Wide Area Connector

Use switch settings supporting the following attributes:

IRQ	5
I/O	120-13F (hex)

Return to the procedure that directed you here.

4.15 Start of Repair for All PS/2 Based

Before starting here, ensure that you read 4.2.1, “General Information” on page 45, and that you are working on a PS/2 based (Model 95xx) Hardware Management Console.

Find the task you want to do in the **Action** column of the following table. Then, go to the information in the **Go To** column.

Action	Go To
Repair a Hardware Management Console problem.	4.16, “PS/2 Based Hardware Management Console Failures” on page 107
Test a Hardware Management Console.	4.25, “Testing the PS/2 Based Hardware Management Console” on page 133
Back up hard disk information on the Hardware Management Console	4.27.3, “Saving Hardware Management Console Configuration” on page 157
Restore information to a Hardware Management Console hard disk.	4.27.4, “Restore Hard Disk Information (Hardware Management Console)” on page 158
Check modem settings.	4.27.1, “Modem Settings” on page 154.
Reference Diskette Update.	4.27.2.1, “Updating a PS/2 Reference Diskette” on page 156
Token-Ring adapter LEDs.	4.27.6.1, “Auto 16/4 Token-Ring Adapter LEDs” on page 164
Token-Ring terms.	4.27.7, “Terms Used For LANs” on page 164
PS/2 locations.	4.1.1.1, “Locations for PS/2 Based Hardware Management Consoles” on page 43
Additional PS/2 maintenance information.	PS/2 maintenance information.

Table 15. Action List for PS/2 Maintenance

4.16 PS/2 Based Hardware Management Console Failures

Use this chapter when you are directed here by a Repair and Verify window or when the customer asked you to repair a problem on the Hardware Management Console.

Note: If you are directed to exchange PS/2 FRUs, refer to the PS/2 maintenance information for removal and replacement instructions.

If auto configuration is run during the repair, ensure the Token-Ring adapter settings are correct. Use the instructions in step 19 in 4.19, "Undetermined Errors for PS/2 Based" on page 112.

If an options diskette is included with the replacement FRU, use that diskette and update the PC's reference and diagnostic diskettes. Use the instructions in 4.27.2.1, "Updating a PS/2 Reference Diskette" on page 156.

1

Were you directed here by a Perform a Console Repair Action window?

NO YES

↓ Go to step 3.

2

Go to 4.17, "Operator Detected Errors for PS/2 Based" on page 109.

3

On the Perform a Console Repair Action window:

- Write down the FRU list for the problem.
- Select **Delay the repair**.
- Select **Enter** on the next Repair and Verify window.

Find any FRU location from your FRU list on Table 16 and go to the page indicated.

Your FRU list may contain FRUs that are not in the table.

The table shows most FRUs start with xxxx. For Hardware Management Console FRUs the xxxx is replaced with A00M.

Before exchanging any FRUs, record the FRU part number, serial number, and engineering change (EC) level of the new FRU.

FRU Locations	Go To
xxxx_RW_OPTICAL_DISK xxxx_RW_OPTICAL_DRIVE xxxx_RW_OPTICAL_DRIVE_CABLE	4.21, "Read/Write Optical Drive Errors for PS/2 Based" on page 120
xxxx_FIXED_DISK	4.20, "Hard Disk Errors for PS/2 Based" on page 118
xxxx_DISKETTE xxxx_DISKETTE_DRIVE xxxx_DISKETTE_DRIVE_CBL	4.22, "Diskette Errors for PS/2 Based" on page 123
xxxx_COMM_ADAPTER LOCAL_MODEM xxxx_MODEM_CABLE	4.23, "Remote Support/Remote Console Errors for PS/2 Based" on page 125
xxxx_TOKEN_RING_ADAPTER xxxx_LAN_CABLE LAN_CONNECTOR_DEVICE	4.27, "Local Area Network (LAN) Feature Errors" on page 138
xxxx_3270_ADAPTER xxxx_3270_CABLE	4.24, "3270 Feature Errors for PS/2 Based" on page 129
xxxxAA01	4.19, "Undetermined Errors for PS/2 Based" on page 112
No FRUs displayed	4.17, "Operator Detected Errors for PS/2 Based" on page 109

Table 16. FRU Locations for PS/2 Based Hardware Management Console

4.17 Operator Detected Errors for PS/2 Based

Use this section when:

- Problem Analysis ran for a failure on a 9221 Service Processor (SP) or Hardware Management Console and no FRUs were reported.
- Problem Analysis could not be run because of the failure on the 9221 Service Processor (SP) or Hardware Management Console.
- Messages displayed on the Hardware Management Console.

Find the reason for the call under **Problem Area Reported**. Then, go to the page indicated.

Problem Area Reported	Go To
Optical drive	4.21, "Read/Write Optical Drive Errors for PS/2 Based" on page 120
Hard disk	4.20, "Hard Disk Errors for PS/2 Based" on page 118
Diskette drive	4.22, "Diskette Errors for PS/2 Based" on page 123
Telecommunications feature	4.23, "Remote Support/Remote Console Errors for PS/2 Based" on page 125
Hardware Management Console used as system (operator's) console	4.24, "3270 Feature Errors for PS/2 Based" on page 129
Message of SYSxxxx indicating a TRAPxxxx occurred. (xxxx can be any digits.)	4.18, "Trap Errors for PS/2 Based" on page 110
Message of LTxxxxx or ACSxxxx indicating a Communications Manager or Local Area Network error occurred because of any of the following: Lobe cable problem Beaconing condition Other communications problem	4.27, "Local Area Network (LAN) Feature Errors" on page 138
Operator reported "Communication not active."	4.27, "Local Area Network (LAN) Feature Errors" on page 138
Message of MACHxxx indicating a Communications Manager or 3270 communications error occurred because of a 3270 communications failure.	4.24, "3270 Feature Errors for PS/2 Based" on page 129
Operator reported that either OS/2 or the Hardware Management Console application did not start but there were no other error indications.	4.19, "Undetermined Errors for PS/2 Based" on page 112
All other problems (for example; power, display, mouse, keyboard)	4.19, "Undetermined Errors for PS/2 Based" on page 112

4.18 Trap Errors for PS/2 Based

Use this section when the operator reports a message indicating that a trap condition occurred and Problem Analysis either did not find the problem or could not be run because of the error.

Note: The locations for the Hardware Management Console feature cards are given in 4.1, "Hardware Management Console Locations" on page 43. For the locations of other FRUs, refer to the PS/2 maintenance information shipped with the system.

1

Did the customer report a message indicating TRAP0008?

YES NO

↓ Go to step 3.

The messages start with SYSxxxx (xxxx can be any digits), the trap indication is displayed following the message.

2

Exchange the multiprotocol adapter feature card in the Hardware Management Console.

Test using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **All devices**.

- If the tests run without error, restart the Hardware Management Console and close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If an error is detected, use the procedures in the PS/2 maintenance information to isolate the problem. When complete, restart the failing console and close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

3

Was there a message indicating TRAP0002?

YES NO

↓ Go to 4.19, "Undetermined Errors for PS/2 Based" on page 112.

4

Test using the procedure in 4.25, “Testing the PS/2 Based Hardware Management Console” on page 133. Select the test for **xxxx KB Memory**. (xxxx is the memory size.)

- If the tests fail, use the procedures in the PS/2 maintenance information to isolate the problem. When complete, close the call. For instructions, see 4.28, “Close Solved Problems on Hardware Management Console” on page 164.
 - If the tests do not fail or if you cannot isolate the problem, go to 4.19, “Undetermined Errors for PS/2 Based” on page 112.
-

4.19 Undetermined Errors for PS/2 Based

Use this section when the operator detected a failure and Problem Analysis did not run automatically or, Problem Analysis could not be run because of a problem on the Hardware Management Console.

The following procedure will direct you to use the documents shipped with the Hardware Management Console to repair failures. **After the repair, return to this procedure to complete the call.**

Note: The locations for Hardware Management Console feature cards are given in 4.1.1.1, "Locations for PS/2 Based Hardware Management Consoles" on page 43. For the locations of other FRUs, refer to the PS/2 maintenance information shipped with the system.

If auto configuration is run during the repair, ensure the Token-Ring adapter settings are correct. Use the instructions in step 19 of this procedure.

1

Do you have the following symptoms?

- OS/2 Desktop or licensed internal code for the Hardware Management Console fails to start.
- No reference code or any other error information displayed.

After power on the OS/2 Desktop should display, then the Logon window for the Hardware Management Console.

YES NO

↓ Go to step 8.

2

- Ensure the display is powered on.
- Power off the processor unit of the PS/2.
- Insert the Reference diskette in the diskette drive.
- Power on the processor unit of the PS/2.
- Watch the display for the digits indicating the PS/2 memory test is running.

When the test is complete, go to step 3.

3

Did the memory test detect any errors?

NO YES

↓ Go to step 8.

The test displays digits in the upper left hand corner of the display. If memory errors are detected, testing stops and an error code displays. If no errors are detected the digits increment to the size of the memory in the PS/2 processor unit, the speaker "beeps," information is read from the Reference diskette, and the Reference diskette logo displays.

4

Did the Reference diskette logo display?

YES NO

↓ Go to step 8.

5

Do the following:

- Press **Enter** to display the Main Menu.
- Press **Ctrl** and **A** together (**Ctrl+A**) to display the Advanced Diagnostic Menu.
- Select **Run system checkout** and press **Enter**.
- Use the table in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133 to verify the list of installed devices is correct:
 - If the list is not correct, go to step 8.
 - If the list is correct, press **Y**.
- On the Test Selection Menu, select **Run tests one time** and press **Enter**.
- On the Device Test Menu, select **Test All Devices** and press **Enter**.
- Answer the questions provided by the test program.

Note: When asked if you want to verify SCSI data readability, type **Y**.

When testing is complete, go to step 6.

6

Did the tests detect any errors?

NO YES

↓ Go to step 8.

7

Reload the licensed internal code on the hard drive using the procedure in 4.27.4, "Restore Hard Disk Information (Hardware Management Console)" on page 158.

When the licensed internal code is restored, press and hold **Ctrl** and **Alt** together, then press **Delete (Ctrl+Alt+Delete)**.

- If the licensed internal code starts correctly the problem is resolved. Close the call using the procedure in 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If the failure still occurs, call the next level of support.

End of procedure.

8

Use the procedures in the PS/2 maintenance information to isolate the failure and exchange FRUs.

Note: If you are directed to test using the Reference diskette, use the feature list in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133.

Return to step 9 of this procedure when the problem is repaired or if the problem cannot be isolated.

9

If you have not already done so, verify the repair. For instructions, see 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133.

Note: If you were not able to isolate a failure, call the next level of support.

Did the tests run without errors?

NO YES

↓ Go to step 11.

10

Continue exchanging FRUs from the FRU list and testing with the Reference diskette until the problem is resolved.

Reinstall any FRUs that do not fix the problem.

When you resolve the problem, go to step 11.

If you cannot resolve the problem, call the next level of support.

11

Did you exchange the system board, bus adapter card, or the battery?

YES NO

↓ Go to step 13.

12

This step ensures the clock is set correctly.

- Ensure the Reference Diskette is installed.
- Press **Alt** and **Ctrl** together, then press **Delete** to load the Reference Diskette.
- On the Main Menu, select **Set features**.
- From the Set Features window select **Set date and time**.
- On the Set Time and Date window:
 - Type in the date (mm-dd-yyyy).
 - Use the **Tab** key to move the cursor to the **Time** field.
 - Type in the time (use the 24-hour clock).
 - Press **Enter**.

When the time and date are set, go to step 13.

13

Did you exchange the hard disk drive?

YES NO

↓ Go to step 16.

14

Ensure that the SCSI ID for the new hard disk is the same as the old drive. For procedures, refer to "SCSI ID Numbers" in the PS/2 maintenance information.

If you exchanged the default hard disk, restore the system partition on the new hard disk as follows:

Note: Only PS/2 models with an IBM SCSI adapter have a System Partition on hard disk. If the PS/2 on which you are working does not have a System Partition on hard disk go to step 15.

- Insert the Reference diskette in the diskette drive.
- Press and hold the **Alt** and **Ctrl** keys, then press **Delete**. (**Alt+Ctrl+Delete**)
- When the Main Menu displays, select **Backup/Restore system programs** and press **Enter**.
- Select **Restore the System Partition** option and press **Enter**.

Go to step 15.

15

Load system information on the new hard disk. For instructions, refer to 4.27.4, "Restore Hard Disk Information (Hardware Management Console)" on page 158.

When hard disk recovery is complete, go to step 16.

16

Did you exchange the optical drive?

YES NO

↓ Go to step 19.

17

Ensure that the SCSI ID for the new optical drive is the same as the old drive. For procedures, refer to "SCSI ID Numbers" in the PS/2 maintenance information.

Go to step 18.

This loads the IML image, the system programs, and the customer and advanced diagnostic programs.

This step copies system licensed internal code and customization information to the new hard disk.

Note: Usually the read/write optical drive SCSI ID is set to 3. SCSI ID 0 is often used for the IBM 230 R/W optical disk. Switch settings for the Fujitsu Read/Write Optical Drive Model M2512A22 (IBM part number 62G0546) are in 4.27.2, "Switch Settings for Fujitsu Read/Write Optical Drive" on page 156.

18

Use the instructions in 4.27.3, "Saving Hardware Management Console Configuration" on page 157 to create a backup cartridge for hard disk data.

When the backup is complete, go to step 19.

19

Do the following to ensure correct option settings:

- Ensure the Reference Diskette is installed.
- Press **Alt** and **Ctrl** together, then press **Delete** to load the Reference Diskette.
- On the Main Menu, select **Set Configuration**.
- From the Set Configuration window select **Change Configuration**.
- Scroll to the slot containing the **16/4 Token-Ring Adapter** for option selections.
- Ensure **Interrupt Level** is set to **Interrupt 2**.
- Ensure **Adapter Data Rate** is set to **16 Mbps**.
- Ensure **ROM Address Range** is set to **CC000-CDFFF** (See Note.)
- Ensure **RAM Size and Address Range** is set to **16KB/D8000-DBFFF** (See Note.)
- If **Autosense** displays, ensure it is set to **Off**.
- If **Enable or Disable RPL** displays, ensure it is set to **Disabled**.
- Press **F10** to save the options.
- Follow directions for exit.

Note: Use the ↑ and ↓ keys to scroll the selections. Use the **F5** and **F6** keys to change the selections.

Setting the Adapter Data Rate to the incorrect value will cause LAN errors.

When the option settings are correct, go to step 20.

20

- Remove the reference diskette.
 - Press and hold **Ctrl** and **Alt**; then press **Delete** (**Alt+Ctrl+Delete**). Release them all.
 - When complete, close the call. Use the procedure in 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
-

4.20 Hard Disk Errors for PS/2 Based

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_FIXED_DISK or when the customer reports a hard disk problem.

1

Test the hard disk using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **SCSI Fixed Disk(s)**.

Return to step 2 of this procedure when the test is complete.

2

Did the hard disk tests fail?

YES NO

↓ Go to step 7.

3

Exchange the FRUs called by the diagnostics one at a time. For FRU removal and replacement instructions, refer to the PS/2 maintenance information.

When each FRU is exchanged, test the repair using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **SCSI Fixed Disk(s)**.

Did the hard disk tests fail?

NO YES

↓ call the next level of support

4

Did you exchange a hard disk drive?

YES NO

↓ Go to step 7.

5

Ensure that the SCSI ID for the new hard disk is the same as the old drive. For procedures, refer to "SCSI ID Numbers" in the PS/2 maintenance information.

If you exchanged the default hard disk, restore the system partition on the new hard disk as follows:

Note: Only PS/2 models with an IBM SCSI adapter have a System Partition on hard disk. If the PS/2 on which you are working does not have a System Partition on hard disk go to step 6.

- Insert the Reference diskette in the diskette drive.
- Press and hold the **Alt** and **Ctrl** keys, then press **Delete**. (**Alt+Ctrl+Delete**)
- When the Main Menu displays, select **Backup/Restore system programs** and press **Enter**.
- Select **Restore the System Partition** option and press **Enter**.

Go to step 6.

6

Restore the licensed internal code to the new hard disk. For instructions, see 4.27.4, "Restore Hard Disk Information (Hardware Management Console)" on page 158.

When complete, go to step 7.

7

Test using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **All devices**.

- If the tests fail, use the procedures in the PS/2 maintenance information to isolate the problem.
 - When complete, remove the reference diskette.
 - Press and hold **Ctrl** and **Alt**; then press **Delete** (**Alt+Ctrl+Delete**). Release them all.
 - Close the call, for instructions, see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
-

This loads the IML image, the system programs, and the customer and advanced diagnostic programs.

Note: If the tests do not fail or if you cannot isolate the problem, call the next level of support.

End of procedure.

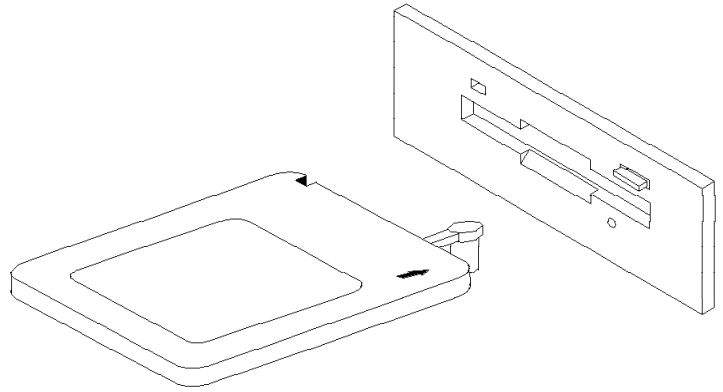
4.21 Read/Write Optical Drive Errors for PS/2 Based

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_RW_OPTICAL or xxxx_RW_OPTICAL_DRIVE or the customer reports an optical drive problem on the Hardware Management Console.

1

Clean the sensor in the optical drive as follows:

- Remove the cartridge from the drive.
- Remove the cover over the brush on the optical cleaning card (38F8681 or 66G7444).
- Insert the optical cleaning card into the drive as shown.
- Remove the optical cleaning card and reinstall the original cartridge.



Go to step 2.

2

Retry the original task using the original cartridge.

Did the failure occur again?

YES NO

- ↓ Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
-

If you do not know what the original operation was or cannot run it, use the procedure under 4.27.3, "Saving Hardware Management Console Configuration" on page 157.

3

Test the optical drive using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **Optical Drive**.

Note: Do not test with the optical cartridge on which the errors occurred. Use a new cartridge.

When the test is complete, go to step 4 of this procedure.

Note: If you cannot start test the because of the optical drive failure, go to step 4 and answer the question "YES."

4

Did the tests fail while testing with the new cartridge?

Note: Answer "YES" if you were not able to run the tests because of errors.

YES NO

- ↓ Go to step 7.
-

5

Exchange the optical drive.

When complete, run the tests again.

Did the optical drive tests fail again?

NO YES

- ↓ Continue exchanging FRUs from the FRU list and running tests. If the FRUs fix the problem, close the call. For information, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164. If you cannot resolve the problem, call the next level of support.

For information on FRU removal and replacements, refer to the PS/2 maintenance information.

6

Ensure that the SCSI ID for the new optical drive is the same as the old drive. For procedures, refer to "SCSI ID Numbers" in the PS/2 maintenance information.

When complete, close the call. For instructions, see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

Note: Usually the read/write optical drive SCSI ID is set to 3. The ID for the IBM 230 R/W optical is often set to 0. Switch settings for the Fujitsu Read/Write Optical Drive Model M2512A22 (IBM part number 62G0546) are in 4.27.2, "Switch Settings for Fujitsu Read/Write Optical Drive" on page 156.

7

Did the **original failure** occur while **writing** to a cartridge?

YES NO

- ↓ Go to step 9.

8

Retry the original task using a new cartridge.

- If the failure occurs again, go to step 10.
- If no failures occur, the original cartridge was defective. Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

The new cartridge must be formatted before attempting to write on it. Use an OS/2 window and type FORMAT x: after the prompt where x is the drive identifier. (The optical drive identifier is F: unless additional hard drives were added for special applications. If extra drives were added, the optical drive identifier is the **last** identifier assigned.)

If you do not know what the original operation was or cannot run it, use the procedure under 4.27.3, "Saving Hardware Management Console Configuration" on page 157.

9

Recreate the information on the cartridge or get a new cartridge with the information.

Retry the original task.

- If the failure occurs again, go to step 10.
 - If no failures occur close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
-

10

Test using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **All devices**.

- If the tests fail, use the procedures in the PS/2 maintenance information to isolate the problem. When complete, close the call. For instructions, see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
 - If the tests do not fail or if you cannot isolate the problem, call the next level of support.
-

4.22 Diskette Errors for PS/2 Based

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_DISKETTE or xxxx_DISKETTE_DRIVE or the customer reports a diskette problem.

1

Test the diskette drive using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **Diskette Drive(s)**.

Note: If you cannot start the test because of the diskette drive failure, go to step 2 and answer the question "YES."

Note: Do not test with the diskette on which the errors occurred. Use a new diskette.

When the test is complete, return to step 2 of this procedure.

2

Did the diskette tests fail while testing with the new diskette?

Note: Answer "YES" if you were not able to run the tests because of the diskette errors.

YES NO

↓ Go to step 5.

3

Exchange the diskette drive.

When complete, run the diskette tests again.

Did the diskette tests fail again?

YES NO

↓ Close the call. For instructions see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

For FRU removal and replacement procedures, refer to the PS/2 maintenance information.

4

Continue exchanging FRUs from the FRU list and running tests. If the FRUs fix the problem, close the call. For information, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164. If you cannot resolve the problem, call the next level of support.

5

Did the **original failure** occur while **writing** to a diskette?

YES NO

↓ Go to step 7.

6

Retry the original task using a new diskette.

- If the failure occurs again, go to step 8.
- If no failures occur, the original diskette was defective. Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

The new diskette must be formatted before attempting to write on it.

7

Recreate the information on the diskette or get a new diskette with the information.

Retry the original task.

- If the failure occurs again, go to step 8.
- If no failures occur close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

8

Test using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **All devices**.

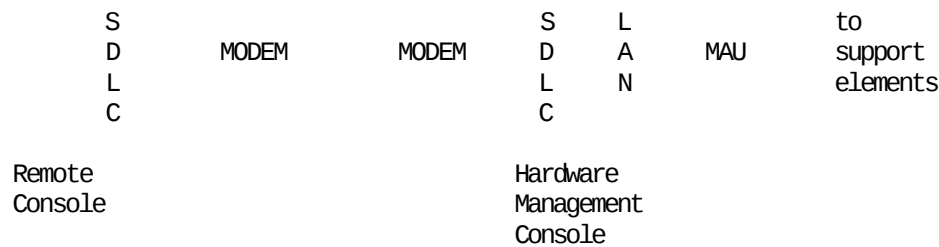
- If the tests fail, follow the procedures in the PS/2 maintenance information. When complete, close the call. For instructions, see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
 - If the tests do not fail or if you cannot isolate the problem, call the next level of support.
-

4.23 Remote Support/Remote Console Errors for PS/2 Based

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_COMM_ADAPTER, LOCAL_MODEM, or xxxx_MODEM_CABLE or when the customer reports a problem communicating with a remote console.

The telecommunications feature on the Hardware Management Console can be used to send service information to or retrieve licensed internal code fixes from the IBM Service Support system, or to connect to the customer’s remote console.

The following picture shows how the telecommunications feature is connected.



1

Many telecommunications feature problems are caused by incorrect setup information.

Check the following at the Hardware Management Console:

- Authorize Remote Connections is selected and the remote customization information for all 9221 Service Processor (SP)s is correct.
- Check the modem setup. For information, refer to 4.27.1, “Modem Settings” on page 154.

If the connection to the remote console is failing, have the customer verify that Communications Manager/2 and DCAF are correctly installed and configured on the remote console. For information, refer to “Remote Console Operations” in *Hardware Management Console Guide*, GC38-0453. Also ensure that the modem at the remote console end is set up correctly.

If a modem is disconnected, powered off, or has the setup changed **or** console configuration data is changed; restart the console.

To restart a console, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete (Alt+Ctrl+Delete)**

2

Did you find a setup problem in step 1?

YES NO



Go to step 4.

Note: If you restarted the Hardware Management Console or remote console in the previous step, answer this question "YES."

3

Retry the failing operation.

- If the telecommunications feature works correctly now, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
 - If the telecommunications feature still fails, go to step 4.
-

4

At the Hardware Management Console, test the multiprotocol adapter feature card and cable using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **Multiprotocol Adapter(s)**.

When the test is complete, go to step 5 of this procedure.

5

Did the multiprotocol adapter tests fail?

YES NO



Go to step 7.

6

Exchange the multiprotocol feature card in the Hardware Management Console and the modem cable one at a time and rerun the tests to isolate the failure.

The test instructions will assist you in isolating cable failures.

- When you complete the repair, restart the Hardware Management Console. When complete, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164
 - If you cannot isolate the problem, call the next level of support
-

7

If an IBM modem is installed at the Hardware Management Console, use the procedures in the maintenance information for the modem to test the modem and the telecommunications network.

If the modem is not an IBM modem, ask the customer to have the modem and network tested.

When complete, go to step 8.

8

Did the modem or network tests fail?

YES NO

↓ Go to step 10.

9

If the tests indicate a failure in an IBM modem, use the maintenance information for the modem to repair it.

If the tests indicate a failure in a non-IBM modem or the network, have the customer request service.

When complete, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

10

Does the error occur while trying to communicate with a remote operator console?

YES NO

↓ Go to step 13.

11

If possible, have the customer or another service representative test the multiprotocol adapter feature and modem at the remote console.

- If it is not possible to have the tests run at the remote console, go to step 13.
 - Otherwise, when testing is complete, go to step 12.
-

12

Did the tests at the remote console fail?

NO YES

- ↓ Have the equipment at the remote location serviced. When complete, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
-

13

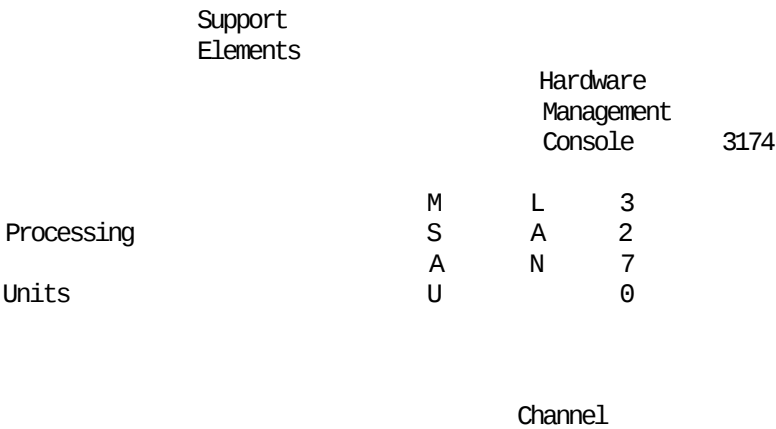
Test the Hardware Management Console using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **All devices**.

- If the tests fail, follow the procedures in the PS/2 maintenance information to isolate the problem. When complete, close the call. For instructions, see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
 - If the tests do not fail or if you cannot isolate the problem, call the next level of support.
-

4.24 3270 Feature Errors for PS/2 Based

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_3270_ADAPTER or xxxx_3270_CABLE or when no FRUs were detected but the customer reported a problem using the Hardware Management Console as the system console.

The 3270 emulator feature card in the Hardware Management Console connects a channel-attached 3174 (or equivalent), or an FC6120 workstation controller on a 9221. This allows the Hardware Management Console to also be used as an operator (system) console. The following picture shows how the 3270 emulator feature is connected.



1

At the Hardware Management Console, test the 3270 emulator feature card using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **IBM 3270 Connection Ver. B**.

When the test is complete, return to step 2 of this procedure.

2

Did the 3270 emulator feature tests fail?

YES NO

↓ Go to step 4.

3

Exchange the 3270 emulator feature card and the cable one at a time and rerun the tests to isolate the failure.

Note: Exchange the FRUs in the sequence listed in the FRU list for this problem.

- When you complete the repair, restart the Hardware Management Console. When complete, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164
- If you cannot isolate the problem, call the next level of support

To restart the Hardware Management Console, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete** (**Alt+Ctrl+Delete**).

4

- Determine which 3174 or other workstation controller is connected to the Hardware Management Console and which port is used for the connection.
- Locate another terminal connected to the same workstation controller.

Note: The terminal must be a Control Unit Terminal (CUT) device; for example, a 3278 or 3279.

- Use the terminal to run a port wrap test to the port the Hardware Management Console is connected to as follows:
 - Press **Alt** and **Test** together. The test mode screen displays on the terminal.
 - Press **PF12**. The test menu displays on the terminal.
 - Type **10** (to select the port wrap test) and press **Enter**. The Port Wrap Test screen displays on the terminal.
 - Type **1**, followed by **,** (comma), followed by the port address of the Hardware Management Console, then press **Enter**. The Port Wrap Test runs.

Go to step 5.

5

Did the port wrap test fail?

YES NO

↓ Go to step 10.

A message on the Port Wrap Test window indicates the status of the test.

6

At the workstation controller connected to the Hardware Management Console, disconnect the cable to the Hardware Management Console.

Use the procedure in step 4 to run the port wrap test again.

When complete, go to step 7.

7

Did the port wrap test fail?

YES NO

↓ Go to step 9.

8

The failure is in the workstation controller connected to the Hardware Management Console.

Go to the workstation controller information to resolve the problem.

When you complete the repair, restart the Hardware Management Console. When reset is complete, close the call. For information, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

To restart the Hardware Management Console, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete** (**Alt+Ctrl+Delete**).

9

The failure is in the 3270 feature card or the cable from the Hardware Management Console.

Isolate the problem by exchanging the cable and feature card one at a time and rerunning the port wrap test.

When you complete the repair, restart the Hardware Management Console. When reset is complete, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

If you cannot find the problem, call the next level of support.

To restart the Hardware Management Console, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete** (**Alt+Ctrl+Delete**).

10

Has the 3270 feature worked correctly at some time before this problem was reported? (See **Note**.)

NO YES

↓ Go to step 12.

Note: If the feature was recently added to the system, there may be a configuration problem.

11

Have the customer check the configuration for the workstation controller.

If you find the problem, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

If you cannot find the problem, go to step 12.

12

Test the Hardware Management Console using the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **All devices**.

- If the tests fail, follow the procedures in the PS/2 maintenance information to isolate the problem. When complete, close the call. For instructions, see 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
 - If the tests do not fail or if you cannot isolate the problem, call the next level of support.
-

4.25 Testing the PS/2 Based Hardware Management Console

This section describes IBM PS/2 Model 95xx hardware maintenance procedures. Use the information in this section when you are directed to test the Hardware Management Console to isolate a problem or verify a repair.

PC maintenance procedures vary depending on PC type and model. Verify your PC type and model before attempting a repair.

Note: The IBM PS/2 uses MicroChannel Architecture (MCA) adapters. Maintenance procedures and configuration are performed using a reference and diagnostic diskette.

Refer to the *IBM Personal System/2 Hardware Maintenance Manual*, (S52G-9971) for FRU replacement procedures.

You will be asked to verify a list of features installed. The features installed on the Hardware Management Console are listed below.

Hardware Management Console
System Unit 16384MB Keyboard Parallel Port 1 Diskette Drive(s) Async Port 1 IBM 3270 Connection Mouse Port SCSI 1 Multiprotocol Adapter(s) Async Port 2 XGA-2 Video -- or -- Video on System Board (9577-BNG) 1 SCSI Hard Disk(s) Primary Token-Ring Adapter 1 Optical Memory Drive(s)
Note: The features shown above are for a basic Hardware Management Console. The customer may add additional features to run special applications. If so, request the customer's assistance in testing these adapters.

Hardware Management Console
System Unit 486 DX4 33/99 Mhz 32MB ECC Memory 256KB L2 Cache Keyboard Parallel Port 1 Diskette Drive(s) Async Port 1 Async Port 2 IBM 3270 Connection Mouse Port SCSI-2 1 Multiprotocol Adapter(s) Video on System Board (9577-VTG or S09) 1 SCSI Hard Disk(s) Primary Token-Ring Adapter 1 Optical Memory Drive(s) Note: The features shown above are for a Hardware Management Console used with RPQ S02368.

1

- Locate the Reference diskette for the Hardware Management Console you are testing.
-

2

- Ensure all cables are connected and that the system unit and display are powered on.
- Insert the Reference Diskette in the diskette drive.
- Press and hold the **Alt** and **Ctrl** keys. Then, press **Delete (Alt+Ctrl+Delete)**.
- Release all the keys.
- When the IBM logo window displays, press **Enter**.

Note: The logo window does not require **Enter** on all console models. If it does not, continue with the next step.

3

On the Main Menu window:

- Press and hold **Ctrl**.
 - Then, press **A (Ctrl+A)**.
-

4

On the Advanced Diagnostic Menu window:

- Select **System checkout**.
 - Press **Enter**.
-

5

When the list of installed options displays, use the **Note** at the beginning of this section to verify that the list of features displayed is correct.

- If the feature list is not correct, follow the procedures in the PS/2 maintenance information to correct the problem.
 - If the feature list is correct, press **Y** to continue.
-

6

On the Test Selection Menu window:

- Select **Run tests one time**.
 - Press **Enter**.
-

7

On the Device Test Menu window:

- Select the test you were instructed to run.
- Press **Enter**.
- Follow the instructions on the windows to run the test.

Return to the procedure that directed you here.

End of procedure.

4.25.1 PS/2 Token Ring Configuration

1. Ensure the Reference Diskette is installed.
2. Press Alt and Ctrl together, then press Del to load the Reference Diskette.
3. On the Main Menu, select Set Configuration.
4. From Set Configuration, select Change Configuration.
5. Scroll to the slot containing the 16/4 Token-Ring adapter for option selections.
6. Ensure the interrupt level is set to 2.
7. Ensure the Adapter Data Rate is set to 16 Mbps
8. Ensure ROM address range is set to CC000-CDFFF.
9. Ensure RAM size and address range is set to 16KB / D8000-DBFFF.
10. If Autosense displays, ensure it is set to off.
11. If Enable or Disable RPL displays, ensure it is set to Disabled.
12. Copy all the LAN configuration information to use in the LAN test.
13. If options are changed, save the options by pressing F10.
14. Follow the directions for exit.

Notes:

1. Use the and keys to scroll the selections. Use the F5 and F6 keys to change the selection.
2. The data rate and address ranges are the recommended values. If the customer has his own applications installed, the values may be changed.
3. If an "*" displays next to an address range setting, a different address range must be selected.

4.26 Common Information and Procedures

This section contains procedures and information common to ISA based PCs and PS/2s.

For Information On	See
Local Area Network (LAN) errors	4.27, "Local Area Network (LAN) Feature Errors" on page 138
Modem settings	4.27.1, "Modem Settings" on page 154
Switch settings for Fujitsu read/write optical drives	4.27.2, "Switch Settings for Fujitsu Read/Write Optical Drive" on page 156
Updating a PS/2 reference diskette	4.27.2.1, "Updating a PS/2 Reference Diskette" on page 156
Saving Hardware Management Console configuration	4.27.3, "Saving Hardware Management Console Configuration" on page 157
Restoring Hardware Management Console hard disk	4.27.4, "Restore Hard Disk Information (Hardware Management Console)" on page 158
Setting Hardware Management Console display attributes	4.27.5, "Hardware Management Console Display Settings" on page 160
Reset the default domain security for a Hardware Management Console or CPC	4.27.6, "Resetting Default Domain Security" on page 163
Token-Ring adapter LEDs	4.27.6.1, "Auto 16/4 Token-Ring Adapter LEDs" on page 164
LAN terminology	4.27.7, "Terms Used For LANs" on page 164

4.27 Local Area Network (LAN) Feature Errors

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_TOKEN_RING_ADAPTER, or xxxx_LAN_CABLE or when the customer reports a problem communicating with the Token-Ring LAN feature.

This is a common procedure used for all Hardware Management Consoles (PS/2 or ISA based PC).

Service Tips: For Hardware Management Console FRU locations, refer to 4.1, “Hardware Management Console Locations” on page 43. The MAU(s) for a string are located in frame A.: The Hardware Management Console and PS/2 based 9221 Service Processor (SP) LAN Adapter cards can have either an RJ-45 or a 9-Pin D-Shell cable connector. The adapter cards with the RJ-45 connector (Auto 16/4 Token-Ring MC adapter) contain two LED (green/yellow) indicators. The LEDs provide useful information for problem solving and adapter status. Use the instructions in 4.27.6.1, “Auto 16/4 Token-Ring Adapter LEDs” on page 164 for interpreting LED status.

If the Hardware Management Console or PS/2 based 9221 Service Processor (SP) Token-Ring feature card is replaced, the Token-Ring adapter configuration must be verified. For the verification procedures, refer to:

- 4.14.3, “Configuration Procedures for PC based Hardware Management Consoles” on page 78
- 4.25.1, “PS/2 Token Ring Configuration” on page 136

For 9221 SPs, 16Mbps Token-Ring speed is the only value supported.

In the following service procedures, the term “Station” refers to a device, either Hardware Management Console or 9221 Service Processor (SP) that provides one of the input/output points of the Token-Ring network.

Figure 16 on page 139 shows the normal Local Area Network (LAN) connections for the 9221 211 based models. If the configuration shown is connected to other frame strings, the cable from Ring Out (RO) is connected to Ring IN (RI) of the other string and RO from the other string is connected to RI of this string to close the loop.

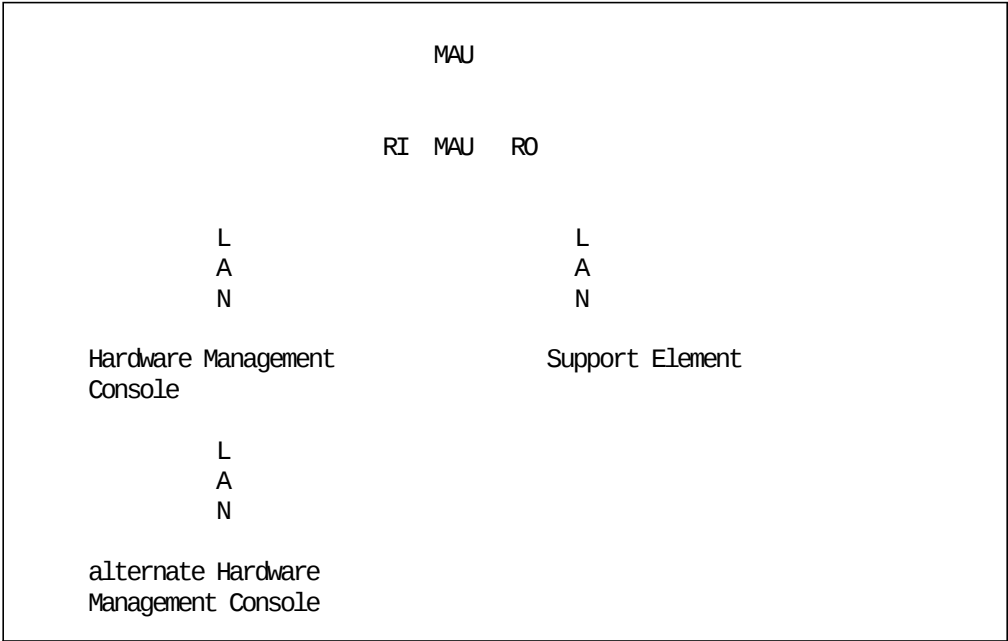


Figure 16. LAN Connection for 9221 211 Based Systems

1

Is only one LAN connection (9221 Service Processor (SP) or Hardware Management Console) failing?

YES NO

↓ Go to step 12.

Note: If you have only one Hardware Management Console and one 9221 Service Processor (SP), consider **both** as failing devices. Answer the question YES and follow the procedures in steps 2 through 11 to test the Hardware Management Console. Use the 9221 maintenance procedures to test the 9221 Service Processor (SP).

2

At the failing 9221 Service Processor (SP) or Hardware Management Console, check the following:

- The LAN adapter cable is securely connected to the LAN adapter card.
- The LAN adapter cable is securely connected to the MAU.

Note: The Hardware Management Console and PS/2 based 9221 Service Processor (SP) LAN adapter cards are identified by a green dot containing 16/4.

3

Was the LAN adapter cable securely connected?

NO YES

↓ Go to step 5.

4

Restart to test the LAN.

- If you are working on a Hardware Management Console and all devices on the LAN work correctly, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If you are working on a 9221 Service Processor (SP) and all devices on the LAN work correctly, restart the system unit and close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If the failure still occurs, go to step 5.

To restart, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete (Alt+Ctrl+Delete)**.

5

Check the Token-Ring adapter configuration.

- For a PS/2 (95xx) Hardware Management Console use the procedure in 4.25.1, "PS/2 Token Ring Configuration" on page 136.
- For a PC (68xx) Hardware Management Console, use the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **Token-Ring** configuration area for the unit under repair.

When the configuration is correct, go to step 6.

6

Were the Token-Ring LAN options correct?

NO **YES**

↓ Go to step 8.

7

Reconnect all cables and restart to test the LAN.

- If you are working on a Hardware Management Console and all devices on the LAN work correctly, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If the failure still occurs, go on to step 8.

Note: Setting the LAN adapter rates to incorrect values will cause errors.

To restart the Hardware Management Console, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete** (**Alt+Ctrl+Delete**).

To restart the 9221 Service Processor (SP), ensure no diskettes are in the diskette drive, then power the system unit off, wait for five seconds and power on.

8

Test the Token-Ring Adapter Operation

- At the MAU, disconnect the cable that connects to the failing station 9221 Service Processor (SP) or Hardware Management Console (indicated by 'X').
- If you are requested to select the cable installed, select Token-Ring Network Adapter Cable.
- If you are working on a PS/2 (85xx or 95xx) 9221 Service Processor (SP) or Hardware Management Console, use the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **Primary Token-Ring Adapter**.
- For a PC (68xx) Hardware Management Console, use the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **Token-Ring** problem area.

When the test is complete, go to step 9 of this procedure.

9

Did the Token-Ring LAN tests fail?

YES NO

↓ Go to step 11.

10

Exchange the Token-Ring LAN feature card and the LAN cable one at a time and rerun the tests to isolate the failure.

If the Token-Ring feature card is exchanged in a PS/2 (Hardware Management Console or 9221 Service Processor (SP)) or a PC based Hardware Management Console, the Token-Ring configuration must be verified.

- For a PC (68xx) Hardware Management Console, refer to 4.14.3, "Configuration Procedures for PC based Hardware Management Consoles" on page 78 and select **Token-Ring** configuration area.
- For a PS/2 (95xx) Hardware Management Console, refer to 4.25.1, "PS/2 Token Ring Configuration" on page 136.

When you complete the repair:

- Ensure the diskette is removed from the drive.
- Ensure the LAN cable is connected.
- Reset the system unit as follows: press and hold **Ctrl** and **Alt**; then press **Delete** (**Alt+Ctrl+Delete**). Release them all.

Then, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

If you cannot isolate the problem, go to step 39.

End of procedure

11

- Plug the failing device in a different MAU location.
- Ensure the diskette is removed from the drive, and restart the device (**Alt+Ctrl+Delete**).

Retry the failing operation.

- If the device works now, exchange the MAU. Then, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If the failure still occurs, go to step 39.

End of procedure

Notes:

1. Exchange the FRUs in the sequence listed in the FRU list for this problem.
2. The LAN adapter cable must be attached to the feature card or the test will fail.

12

Does the Hardware Management Console indicate **all** stations in any string are failing?

YES **NO**

↓ Go to step 32.

13

At the Hardware Management Console, check the following:

- The LAN adapter cable is securely connected to the LAN adapter card.
- The LAN adapter cable is securely connected to the MAU.

The LAN adapter card is identified by a green dot containing 16/4.

14

Was the Hardware Management Console LAN adapter cable securely connected?

NO **YES**

↓ Go to step 16.

15

Restart to test the LAN.

- If all devices on the LAN work correctly, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If the failure still occurs, go to step 16.

To restart the Hardware Management Console, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete** (**Alt+Ctrl+Delete**).

16

Have there been any changes to the LAN network?

YES **NO**

↓ Go to step 32.

Note: Answer this question "YES" if this is a new installation.

17

At the new string:

- If there is a cable connecting Ring In (RI) to Ring Out (RO), ensure it is properly connected. Otherwise:
 - Ensure Ring In (RI) of the new string is connected to Ring Out (RO) of the previous string in the network.
 - Ensure Ring Out (RO) of the new string is connected to Ring In (RI) of the next string in the network.

Go to step 18.

18

Was the new string properly connected to the network?

NO **YES**

↓ Go to step 20.

19

Restart to test the LAN.

- If all devices on the LAN work correctly, close the call. For information, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If the failure still occurs, go to step 20.

To restart, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete (Alt+Ctrl+Delete)**.

20

Check the Token-Ring adapter configuration for each new device on the network.

- For a PS/2 (95xx) 9221 Service Processor (SP) or Hardware Management Console use the procedure in 4.25.1, "PS/2 Token Ring Configuration" on page 136.
- For a PC (68xx) Hardware Management Console, use the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **Token-Ring** configuration area for the unit under repair.

When the configuration is correct, go to step 21.

Note: Setting the LAN adapter rates to incorrect values will cause errors.

21

Was the Token-Ring LAN options for each new device correct?

NO YES

↓ Go to step 23.

22

Reconnect all cables and restart the failing stations to test the LAN.

To restart, ensure no diskettes are in the diskette drive, press and hold **Alt** and **Ctrl** then press **Delete (Alt+Ctrl+Delete)**.

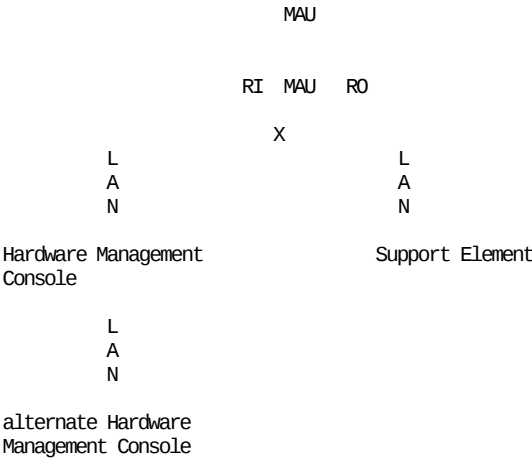
- If all devices on the LAN work correctly, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If the failure still occurs, go on to step 23.

23

Test the Token-Ring Adapter Operation

- At the MAU, disconnect the cable that connects to the failing station 9221 Service Processor (SP) or Hardware Management Console (indicated by 'X').
- If you are requested to select the cable installed, select Token-Ring Network Adapter Cable.
- If you are working on a PS/2 (95xx) Hardware Management Console, use the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **Primary Token-Ring Adapter**.
- For a PC (68xx) Hardware Management Console, use the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. Select **Token-Ring** problem area.

When the test is complete, return to step 24 of this procedure.



24

Did the Token-Ring LAN tests fail?

YES NO

↓ Go to step 26.

25

Exchange the Token-Ring LAN feature card and the LAN cable one at a time and rerun the tests to isolate the failure.

If the Token-Ring feature card is exchanged in a PS/2 (Hardware Management Console or 9221 Service Processor (SP)) **or** a PC based Hardware Management Console, the Token-Ring configuration must be verified.

- For a PC (68xx) Hardware Management Console, refer to 4.14.3, "Configuration Procedures for PC based Hardware Management Consoles" on page 78 and select **Token-Ring** configuration area.
- For a PS/2 (95xx) Hardware Management Console or 9221 Service Processor (SP), refer to 4.25.1, "PS/2 Token Ring Configuration" on page 136.

When you complete the repair:

- Ensure the diskette is removed from the drive.
- Plug the LAN cable, and restart the Hardware Management Console (**Alt+Ctrl+Delete**).

Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

If you cannot isolate the problem, go to step 39.

End of procedure

26

- If you have additional strings attached to the LAN continue with step 27.
 - Otherwise, continue with step 35.
-

27

Attempt to isolate the failure by jumpering out the MAUs one at a time and retrying the failing operation.

Note: When the MAU with the Hardware Management Console is jumpered out, plug the Hardware Management Console into another MAU.

- If you isolate a failing MAU, go to step 28.
- If you cannot isolate a failing MAU, call the next level of support.

From Last String	RI	MAU	RO	RI	MAU	RO	To Next String
L A N				failing MAU			L A N
Hardware Management Console							Support Element
L A N							To other Support Elements
Alternate Console							

28

At the isolated MAU containing the failing stations, attempt to isolate a failing station by unplugging them from the MAU one at a time and retrying the failing operation.

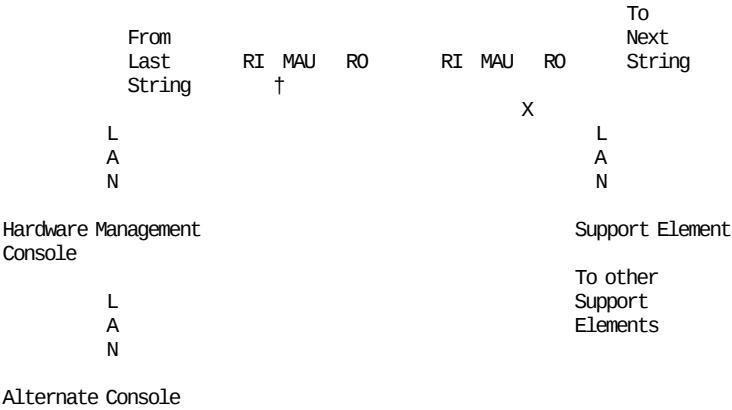
- If you isolate a failing station, go to step 29.
- If you cannot isolate a failing station, exchange the MAU.
- If you cannot isolate either a failing station or MAU, call the next level of support.

29

Test the Token-Ring Adapter Operation

- At the MAU, disconnect the cable that connects to the failing station 9221 Service Processor (SP) or Hardware Management Console (indicated by 'X').
- If you are requested to select the cable installed, select Token-Ring Network Adapter Cable.
- If you are working on a PS/2 (95xx) or Hardware Management Console, use the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **Primary Token-Ring Adapter**.

When the test is complete, return to step 30 of this procedure.



30

Did the Token-Ring LAN tests fail?

YES NO

↓ Go to step 39.

31

Exchange the FRUs in the sequence listed in the FRU list for this problem.

If the Token-Ring feature card is exchanged in a PS/2 (Hardware Management Console or 9221 Service Processor (SP)) **or** a PC based Hardware Management Console, the Token-Ring configuration must be verified.

- For a PC (68xx) Hardware Management Console, refer to 4.14.3, "Configuration Procedures for PC based Hardware Management Consoles" on page 78 and select **Token-Ring** configuration area.
- For a PS/2 (95xx) Hardware Management Console or 9221 Service Processor (SP), refer to 4.25.1, "PS/2 Token Ring Configuration" on page 136.

When you complete the repair:

- Ensure the diskette is removed from the drive.
- Plug the LAN cable, and restart the Hardware Management Console (**Alt+Ctrl+Delete**).

Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

If you cannot isolate the problem, go to step 39.

End of procedure

32

Are all the failing 9221 Service Processors or Hardware Management Consoles connected to the same MAU?

YES NO

↓ Go to step 35.

33

At the **first** station connected to the MAU, verify Token-Ring adapter configuration.

Note: Setting the LAN adapter rates to incorrect values will cause errors.

- For a PS/2 (95xx) Hardware Management Console or 9221 Service Processor (SP) use the procedure in 4.25.1, "PS/2 Token Ring Configuration" on page 136.
- For a PC (68xx) Hardware Management Console, use the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. with the failure. Select **Token-Ring** configuration area for the unit under repair.

When the configuration is correct, go to step 34.

34

Was the Token-Ring LAN configuration correct?

NO YES

↓ Go to step 38.

35

At each failing station connected to the MAU verify the Token-Ring adapter configuration.

Note: Setting the LAN adapter rates to incorrect values will cause errors.

- For a PS/2 (95xx) Hardware Management Console or 9221 Service Processor (SP) use the procedure in 4.25.1, "PS/2 Token Ring Configuration" on page 136.
- For a PC (68xx) Hardware Management Console, use the procedure in 4.14, "Testing the Hardware Management Console for ISA Bus PCs" on page 76. with the failure. Select **Token-Ring** configuration area for the unit under repair.

When the configuration is correct, go to step 36.

36

Was the Token-Ring LAN configuration for each failing station correct?

NO YES

↓ Go to step 38.

37

Reconnect all cables and restart the 9221 Service Processor (SP) to test the LAN.

- If all devices on the LAN work correctly, close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
- If the failure still occurs, go on to step 38.

To restart the 9221 Service Processor (SP), ensure no diskettes are in the diskette drive, Power the system unit off, wait for five seconds, then power it on.

38

Exchange the failing MAU and rerun the failing operation to test.

- When you complete the repair, ensure the diskette is removed and restart the station.
 - Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.
 - If you cannot isolate the problem, go to step 39.
-

39

Test all failing stations

- At the MAU, disconnect the cable that connects to the failing station 9221 Service Processor (SP) or Hardware Management Console.
- If you are requested to select the cable installed, select Token-Ring Network Adapter Cable.
- If you are working on a PS/2 (95xx) Hardware Management Console or 9221 Service Processor (SP), use the procedure in 4.25, "Testing the PS/2 Based Hardware Management Console" on page 133. Select the test for **Run all Selected**.
- If the tests fail, follow the procedures in the PC maintenance information to isolate the problem.

When complete, ensure the diskette is removed from the drive, and restart the workstation (**Alt+Ctrl+Delete**).

Close the call. For instructions, refer to 4.28, "Close Solved Problems on Hardware Management Console" on page 164.

- If the tests do not fail or if you cannot isolate the problem, call the next level of support.

End of procedure

4.27.1 Modem Settings

4.27.1.1 IBM 7855 Settings

If you are using an IBM 7855, refer to "Installation and Configuration" in the *Guide to Operation*, GA33-0160. Follow the instructions to configure the modem for:

- Switched network operation
- Synchronous operation
- DTE sending V.25bis commands

4.27.1.2 IBM 7857 Settings

If you are using an IBM 7857:

- Press the down arrow (↓) until **Configurations** displays on the top row.
- Press the right arrow (→) until **Select Factory** displays on the bottom row.
- Press **ENTER** to select the option. Press the up arrow (↑) until **3** displays.
- Press **ENTER** to load the predefined factory configuration 3.
- Press the down arrow (↓) until **MODE** displays on the top row.
- Use the right arrow (→) to select the desired V.25bis option:
 - **V25 HDLC NRZI-ASC.** C108/2 HDLC, NRZI, ASCII synchronous communication.

Press **ENTER** to select the option.

To save the configuration:

- Press the down arrow (↓) until **Configurations** displays on the top row.
- Press the right arrow (→) until **STORE USER CONFIG** displays on the bottom row.
- Press **ENTER** to select the option. Press the up arrow (↑) until **0** displays.
- Press **ENTER** to save the current configuration.

The current configuration is now saved.

For more information, refer to *IBM 7857 Modem Guide to Operations*, GA13-1839.

4.27.1.3 Settings for Non-IBM Modems

If you are using a non-IBM modem, use the manuals shipped with the modem to set the following configuration:

- Switched line
- NRZI
- Normal DSR and CD
- DTR C108/1
- Auto-handshake disabled
- Multistandard synchronous mode 3
- Escape sequence disabled
- DSR wink
- TC1 and TC2 enabled
- CCITT V.25bis synchronous standard mode
- Handshake break disabled
- No auto reliable or error correction response messages

The ATtention (AT) command string equivalent required for the IBM 7857 is provided as a guide. The non-IBM modems may be different. The AT command string for the IBM 7857 is:

Q0 Messages or return codes are sent to DTE
V1 Selects Return Messages in English Words
Y0 Long Break Disconnect disabled
&A0 Multistandard starting from the DTE speed, the handshake is attempted at the DTE data rate, if unsuccessful, the lower speeds are then tried until the connection is established.
&C1 DSR(C107) and CD(C109) in normal mode
&D2 The modem drops the line and goes off-line when a DTR(C108) transition ON to OFF is detected. Automatic answering or calling are disabled until DTR is turned ON.
&E0 Error Correction Disabled
&G2 V.22 guard tone at 1800Hz is generated.
&H0 Disables leased line auto-handshaking
&I1 Asynchronous Data Buffering, constant DTE speed enabled. CONNECT message indicates the DTE data rate. Parity is transferred in transparent mode.
&K3 XON/XOFF and CTS(C106) DTE flow control.
&L0 Select Switched Line
&M3 Synchronous mode 3
Off Line: Asynchronous mode.
On Line: Synchronous mode.
CTS(C106) is off until the connection with the remote modem is established, regardless of AT&R.
&R0 In the On Line condition, CTS(C106) follows RTS(C105) with the delay specified in register S26 (0 to 2.55 seconds). In the Off Line condition, CTS(C106) is ON.
&U0 Modem to DTE data flow control disabled.
&V1 Command Mode access via Escape sequence (+++) disabled.
&X0 Internal Synchronous DTE Transmit Clock
*A0 Reverse answer tone for V32 or V32bis.
*D0 DTR(C108/1) function is disabled.
*E1 Data Compression V.42bis or MNP-5 enabled.
*G1 Calling tone enabled.
*M1 Select originate mode.
*P1 DSR(C107) wink, after aborted call, DSR goes on for 200ms
*Q1 Retrain on bad line quality
*T3 TC1(C141) and TC2(C140) DTE Interface signals enabled.
*V4 V25bis in C108/2 HDLC, NRZI, ASCII synchronous communications V25bis character format is 7 data bits with even parity
*X1 Transmit and Receive synchronous clocks at the DTE interface always active.
*Y0 Transmit Break by the DTE is immediately passed through the modem, bypassing the buffers, (expedited, non-destructive).
#A0 Autoreliable Buffer and Character disabled.
#B0 Automatic switching from leased line to switched line disabled.
#E0 LAPM protocol Detection Phase disabled.
#F2 Trellis modulation disabled, Proprietary modulation enabled
#J1 Pre-emphasis 1 (high frequency)
#M1 V32/V32bis Fast Training Enabled.
#P1 Handshake/Call break disabled.
#w0 Prefix dialing disabled.
#X0 All/xxxx return messages are disabled

4.27.2 Switch Settings for Fujitsu Read/Write Optical Drive

The switch settings for the Fujitsu Read/Write Optical Drive Model M2512A22 (IBM part number 62G0546) are:

Switch 1 and 2 (SW1 and SW2) are located on the top of the drive. ENH1 is located to the left of SW2 (group of three jumpers).

SW1 positions:

D = Down = OFF
U = Up = ON

	Switch	Resource
SW1:	SW1 - OFF	SCSI ID (4)
	SW2 - ON	SCSI ID (2)
	SW3 - ON	SCSI ID (1)
	SW4 - ON	SCSI Bus Parity Check
	SW5 - OFF	Sync Transfer Mode
	SW6 - ON	Device Type (optical)
	SW7 - ON	Spindle Stop Mode
	SW8 - OFF	Not used

SW2 positions:

D = Down = OFF
U = Up = ON

	Switch	Resource
SW2:	SW1 - OFF	Write Cache Mode
	SW2 - OFF	Verify Mode
	SW3 - OFF	SCSI Mode 1
	SW4 - OFF	SCSI Mode 1
	SW5 - OFF	MacIntosh Mode Disabled
	SW6 - OFF	Not used
	SW7 - OFF	Not used
	SW8 - OFF	Diagnostic

ENH1 jumpers:

- Enable Termination: Ensure all three jumpers are installed
- Disable Termination: Ensure top jumper (next to shield) is removed

4.27.2.1 Updating a PS/2 Reference Diskette

To update a reference diskette with files from an option diskette:

Note: This procedure is used only on a PS/2 based Hardware Management Console.

1. Insert the PC's Reference Diskette in drive A and power on the PC's system unit.
2. Select the item from the main menu that allows you to copy an option diskette and follow the instructions on the panel. This operation copies files from the option diskette to the PC's Reference and Diagnostic diskettes.

Note: Do not use the DOS COPY command.

4.27.3 Saving Hardware Management Console Configuration

You should back up the Hardware Management Console each time you alter the system configuration.

A different HMC backup cartridge is used at each Hardware Management Console. Use the same backup cartridge to restore a Hardware Management Console that was used previously to save the information.

Note: The cartridge used must have a volume identifier (VOLID) field that is either blank or ACTBKP. If a cartridge with a blank VOLID is used, the backup program rewrites it to ACTBKP.

It is good practice to use multiple levels of backup cartridges.

1

At the Hardware Management Console:

- Ensure the BACKUP-CART cartridge is installed in the optical drive.
- Ensure you are signed on in either System Programmer or Service Mode.
- Open **Console Actions** in Views.
- Open **Backup Console Data** in the Console Actions Work Area.

Note: For information on using the Hardware Management Console, refer to *Hardware Management Console Guide*, GC38-0453.

If the Hardware Management Console is not in the correct mode, select **Console Actions** under Views. Select **Log Off** in the Console Actions Work Area.

Go to step 2.

2

Follow the instructions on the Hardware Management Console windows to complete the backup of information.

When complete, leave the BACKUP-CART cartridge in the Hardware Management Console optical drive.

End of procedure.

Leave the cartridge installed so the customer can use scheduled operations to periodically update the critical Hardware Management Console data.

4.27.4 Restore Hard Disk Information (Hardware Management Console)

Use this section when you need to reload the system licensed internal code on a Hardware Management Console hard drive.

You will need:

- MC Restore diskette 1 of 2 (HWMCA - Restore 1)
- One of the following:
 - Hardware Management Console Base Code cartridge (HWMCA-ROC) (9595 XGA) with new level of internal code
 - Hardware Management Console Base Code cartridge (HWMCA-ROC2) (9577 SVGA) with new level of internal code
 - Hardware Management Console Base Code cartridge (HWMCA-ROC3) (68xx SVGA) with new level of internal code
- HMC backup cartridge (BACKUP-CART)

Note: The information on the MC backup cartridge at each Hardware Management Console is different. Use the same backup cartridge to restore a Hardware Management Console that was used previously to save the information.

Restore the Hardware Management Console hard drive as follows:

1

- Ensure power is on.
- Place the MC Restore program diskette 1 of 2 in diskette drive A.
- Press and hold **Ctrl** and **Alt**; then press **Delete** (**Alt+Ctrl+Delete**). Release them all.

Note: Different Restore diskettes are used for the Hardware Management Console and 9221 Service Processor (SP).

2

Follow the instructions on the windows to restore information from the following:

- Hardware Management Console Base Code cartridge with new level of internal code
HWMCA-ROC, HWMCA-ROC2, or
HWMCA-ROC3
- MC Backup cartridge (BACKUP-CART)

Select F8 from the menu. This selection reloads the base code from the base code cartridge and the system configuration information from the backup cartridge.

Note: The F1 selection is used when a *new* level of internal code is to be loaded on the system.

When the procedure calls for the SE-ROC remove the cartridge and diskette from the drives.

To restart the Hardware Management Console press and hold **Ctrl** and **Alt**; then press **Delete** (**Alt+Ctrl+Delete**). Release them all.

Go to step 3.

3

Note: Check to see if you have **all** of the following:

- Licensed internal code level you are installing is EC12933 *or higher*
- Hardware Management Console uses an ISA bus based PC model 6885
- Hardware Management Console uses a 952x display

If you have all the items in the list, go to 4.27.5, “Hardware Management Console Display Settings” on page 160. Otherwise, the procedure is complete.

End of procedure

Note: The procedure in 4.27.5, “Hardware Management Console Display Settings” on page 160 customizes the display used for the Hardware Management Console. It is *not* necessary if any of the following are true:

- the display is a 6554 (P70) or 6555 (P200).
- the PC is a 95xx PS/2 MCA bus

4.27.5 Hardware Management Console Display Settings

This procedure sets the Hardware Management Console display customization parameters. Use this procedure after restoring the Hardware Management Console hard disk or upgrading the licensed internal code level of the Hardware Management Console **only** if you have **all** of the following:

- Licensed internal code level you are installing is EC12933 **or higher**
- Hardware Management Console uses an ISA bus based PC model 6885
- Hardware Management Console uses a 952x display

Note: Do not use this procedure if:

- the display is a 6554 (P70) or 6555 (P200)
- the PC is a 95xx PS/2 MCA bus

1

After the upgrade or restore is complete and the Hardware Management Console Workplace window displays:

- Minimize the Hardware Management Console Workplace window by “clicking” on the minimize icon in the upper right-hand corner.
- Minimize any other windows until only the OS/2 desktop is displayed.
- Open (double click on) **OS/2 System**.
- Open **System Setup** from the OS/2 System - Icon View window.
- Open **System** from the OS/2 System - Icon View window.
- “Click” on the page advance arrow at the bottom of the System Settings window to select Page 2 of 2.

Continue on step 2.

During Hardware Management Console initialization, the system will reboot automatically. After the reboot, the Hardware Management Console video will be configured as:

Selected Monitor: **DEFAULT**
Screen Resolution: **1024x768x256**
Screen Refresh Rate: **43**

Note: The Hardware Management Console is operational at this point. The following steps enhance the video settings.

2

On Page 2 of 2 System - Settings window:

- Select the pull-down menu for the Display name field.
- Select the display type used for your Hardware Management Console from the menu list.
- Close the System - Settings window by double clicking on the icon in the upper left-hand corner.

Continue on step 3.

Display selections include:

IBM 17P/XG
IBM 17X
IBM 21P/21X/21XG

3

On the SVGA window:

- Select **YES**

Continue on step 4.

The SVGA window prompts you: "System needs to run the SVGA utility to improve video refresh capabilities."

4

When the OS/2 desktop displays:

- Shut down the PC.

Note: You can either use the **Shut down** pushbutton on the OS/2 Launchpad, or follow the procedure in 3.3, "Stopping the Hardware Management Console" on page 33.

- Press and hold **Ctrl** and **Alt** together, then press **Delete (Ctrl+Alt+Delete)**.

Continue on step 5.

This reinitializes the Hardware Management Console with the new display settings.

5

After initialization is complete and the Hardware Management Console Workplace window displays:

- Minimize the Hardware Management Console Workplace window by "clicking" on the minimize icon in the upper right-hand corner.
- Minimize any other windows until only the OS/2 desktop is displayed.
- Open (double click on) **OS/2 System**.
- Open **System Setup** from the OS/2 System - Icon View window.
- Open **System** from the OS/2 System - Icon View window.
- On Page 1 of 2, verify that the display selections shown at the right are correct.

Note: If the Screen Refresh Rate is set to "43," change the value to "75".

Continue on step 6.

Verify these settings:

Selected Monitor:	matches your selection
Screen Resolution:	1024x768x256
Screen Refresh Rate:	75

6

Close the System Settings window.

If you changed any value from the previous step:

- Shut down and reinitialize the Hardware Management Console.

(Use the procedure in step 4.)

End of procedure

4.27.6 Resetting Default Domain Security

Use this procedure with assistance from IBM Product Engineering to reset the default domain security for a CPC or Hardware Management Console.

Reset the default domain security of a CPC only if:

- The CPC is stranded outside the domain of any Hardware Management Console, effectively isolating it from the customer's control.
- Or the CPC is in a customized domain, but the customer wants it back in the default domain.

Reset the default domain security of a Hardware Management Console only if the console is in a customized domain, but the customer wants it back in the default domain.

1

Does the customer want to put a Hardware Management Console back in the default domain?

YES NO

↓ **End of procedure.**

2

Resetting the default domain of a Hardware Management Console.

On the Hardware Management Console Workplace window:

- Select **Console Actions** in the **Views** area.
- Select **Log off** from the **Console Actions Work Area**.

Go to step 3.

3

You must log on the Hardware Management Console in the product engineering user mode to reset the default domain for the console.

When you are ready to log on the Hardware Management Console, call for assistance. IBM Product Engineering will provide the remaining instructions for logging on, and for resetting the default domain.

After completing this procedure for one console, go back to step 1.

4.27.6.1 Auto 16/4 Token-Ring Adapter LEDs

In the following table, the first four LED states indicate the sequence that will be displayed when the PC is started and the adapter accesses the LAN successfully. Some of those states may be too brief to observe. The last three LED states indicate problems.

Amber LED	Green LED	Explanation
Blinking	Blinking	The adapter is active and waiting for initialization.
Off	Off	The adapter initialization is in progress, the PC is switched off, or the adapter is not active. Verify the adapter configuration.
Off	Blinking	The adapter did not detect any problems during self-diagnostic tests and is waiting to open. If this LED state occurs after the adapter is open, the adapter has closed.
Off	On	The adapter is operating correctly.
On	Off	The adapter self-diagnostic tests failed; there is a problem with the adapter.
Blinking	Off	The adapter is closed. One of the following conditions exist: • The adapter open failed • The adapter detected a wire fault • The adapter failed the auto-removal test
Blinking	On	The adapter has detected beaconing or a hard error.

4.27.7 Terms Used For LANs

Here are a group of definitions you may find useful when dealing with Token-Ring problems:

Term	Meaning
Auto-removal	A state in which a Token-Ring adapter removes itself from the network to perform tests and determine whether it is the cause of the hard error. If the tests pass, the adapter will reattach itself to the network.
Beaconing	A state that a Token-Ring adapter enters after it detects a hard error. The adapter reports the error condition to devices connected to the network.
Hard error	An error condition on a network that requires removing the error source or reconfiguring the network before it can resume reliable operation.
Initialization	A state in which the adapter is prepared for use after the PC is switched on or rebooted.
Open	A state in which the adapter is attached to the ring.
Station	A device, either Hardware Management Console, that provides one of the input/output points of the Token-Ring network.
Wire Fault	An error condition caused by a break or short in the cable segment connecting the adapter to the MAU.

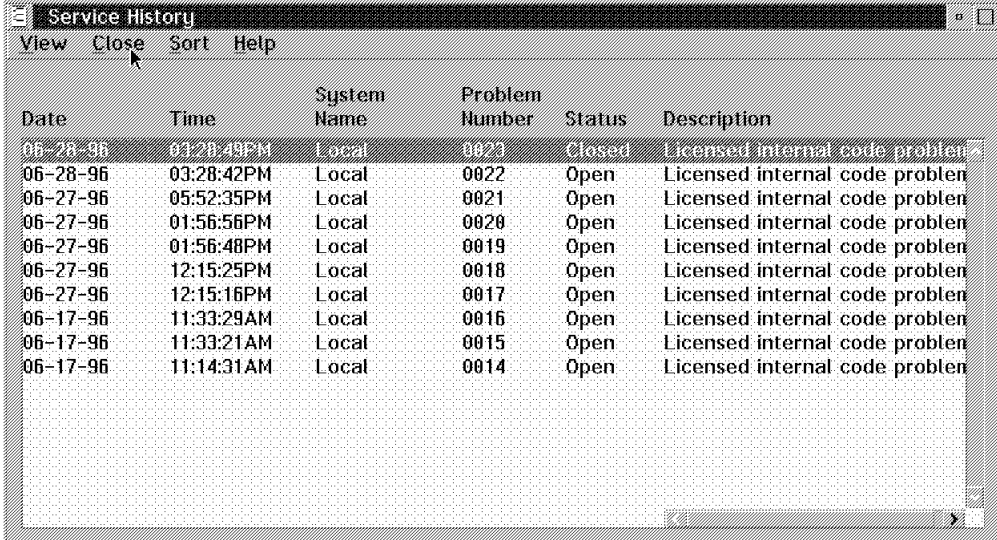
4.28 Close Solved Problems on Hardware Management Console

While logged on in service mode, select Service History from the console actions. You will receive a panel which looks like the panel shown on Figure 17 on page 165. Select the problem you want to close using the mouse (or keyboard).

On the action bar select 'close'. You will receive a panel which looks like the panel shown on Figure 18 on page 165.

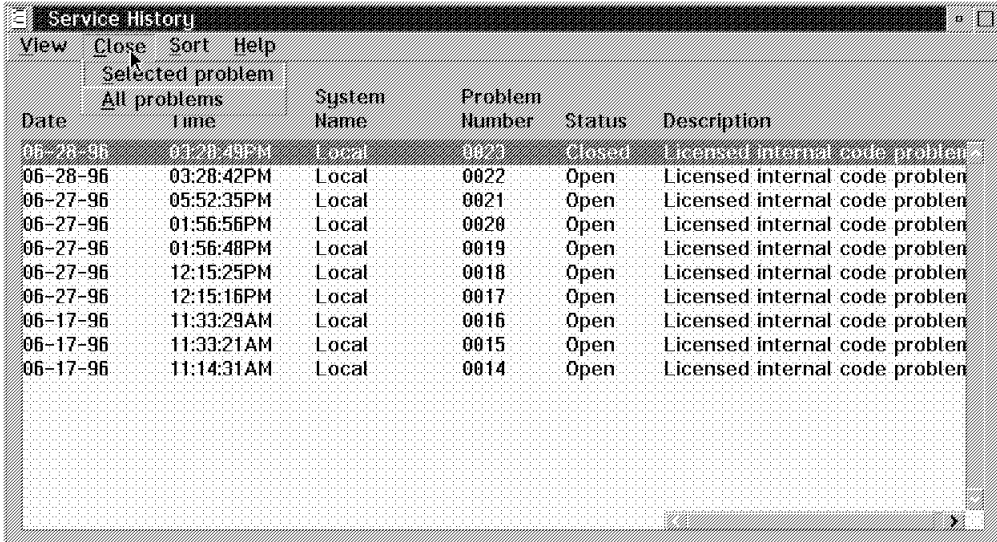
Confirm the action as in Figure 19 on page 166.

The problem is now closed, reference Figure 20 on page 166.



Date	Time	System Name	Problem Number	Status	Description
06-28-96	03:28:49PM	Local	0023	Closed	Licensed internal code problem
06-28-96	03:28:42PM	Local	0022	Open	Licensed internal code problem
06-27-96	05:52:35PM	Local	0021	Open	Licensed internal code problem
06-27-96	01:56:56PM	Local	0020	Open	Licensed internal code problem
06-27-96	01:56:48PM	Local	0019	Open	Licensed internal code problem
06-27-96	12:15:25PM	Local	0018	Open	Licensed internal code problem
06-27-96	12:15:16PM	Local	0017	Open	Licensed internal code problem
06-17-96	11:33:29AM	Local	0016	Open	Licensed internal code problem
06-17-96	11:33:21AM	Local	0015	Open	Licensed internal code problem
06-17-96	11:14:31AM	Local	0014	Open	Licensed internal code problem

Figure 17. Service History



Date	Time	System Name	Problem Number	Status	Description
06-28-96	03:28:49PM	Local	0023	Closed	Licensed internal code problem
06-28-96	03:28:42PM	Local	0022	Open	Licensed internal code problem
06-27-96	05:52:35PM	Local	0021	Open	Licensed internal code problem
06-27-96	01:56:56PM	Local	0020	Open	Licensed internal code problem
06-27-96	01:56:48PM	Local	0019	Open	Licensed internal code problem
06-27-96	12:15:25PM	Local	0018	Open	Licensed internal code problem
06-27-96	12:15:16PM	Local	0017	Open	Licensed internal code problem
06-17-96	11:33:29AM	Local	0016	Open	Licensed internal code problem
06-17-96	11:33:21AM	Local	0015	Open	Licensed internal code problem
06-17-96	11:14:31AM	Local	0014	Open	Licensed internal code problem

Figure 18. Close a Selected Problem

Close Solved Problems on HMC

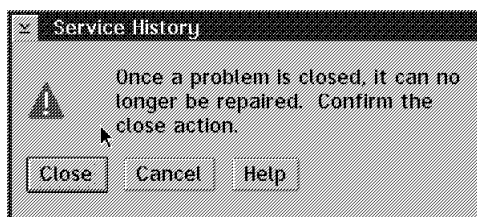


Figure 19. Confirm the Close Action

A window titled "Service History" with a menu bar containing "View", "Close", "Sort", and "Help". It displays a table of service history data. The table has six columns: Date, Time, System Name, Problem Number, Status, and Description. The first row is highlighted, showing a closed problem.

Date	Time	System Name	Problem Number	Status	Description
06-28-96	01:28:49PM	Local	0023	Closed	Licensed internal code problem
06-28-96	03:28:42PM	Local	0022	Open	Licensed internal code problem
06-27-96	05:52:35PM	Local	0021	Open	Licensed internal code problem
06-27-96	01:56:56PM	Local	0020	Open	Licensed internal code problem
06-27-96	01:56:48PM	Local	0019	Open	Licensed internal code problem
06-27-96	12:15:25PM	Local	0018	Open	Licensed internal code problem
06-27-96	12:15:16PM	Local	0017	Open	Licensed internal code problem
06-17-96	11:33:29AM	Local	0016	Open	Licensed internal code problem
06-17-96	11:33:21AM	Local	0015	Open	Licensed internal code problem
06-17-96	11:14:31AM	Local	0014	Open	Licensed internal code problem

Figure 20. Service History Showing a Closed Problem

Chapter 5. Licensed Internal Code Changes

Use the procedures in this section when you are instructed to retrieve, install, activate, remove, or accept internal code changes for the Hardware Management Console.

Find the type of internal code change you want to make in the **Action** column of the following table. Then, go to the pages shown in the **Go To** column.

Action	Go To
Information about licensed internal code changes, EC level changes, and temporary fixes for 9221 Service Processor (SP) .	Refer to the service documentation provided with the 9221 Service Processor (SP). This information is not covered in this manual.
General information about licensed internal code changes, EC level changes, and temporary fixes.	5.1, "General Information on Licensed Internal Code" on page 168.
Information about using Scheduled Operations to install licensed internal code changes.	5.1.1, "Using Scheduled Operations to Make Changes" on page 168.
Installing licensed internal code changes on the Hardware Management Console.	5.2, "Procedures for Changes" on page 172.
Recover from internal code changes on a Hardware Management Console.	5.2.5, "Removing Internal Code Changes" on page 178.
Retrieving licensed internal code changes to a removable media to use on a Hardware Management Console that does not connect to the IBM Support System.	5.2.6, "Retrieving Changes to Removable Media" on page 180.
Install temporary internal code fixes on a Hardware Management Console (direction from IBM Product Engineering).	5.3, "Internal Code Fixes for a Hardware Management Console" on page 182.
Install a new Engineering Change (EC) level of Hardware Management Console licensed internal code.	5.4, "Upgrading Internal Code Level for HMC" on page 185.

5.1 General Information on Licensed Internal Code

Licensed internal code is contained on the fixed disks of the Hardware Management Consoles and 9221 Service Processors. IBM provides changes to the licensed internal code to correct problems or provide new functions. Changes are provided from the IBM Support System, on diskette, or on optical disk.

Note: The fixed disk on a 9221 Service Processor (SP) contains internal code for both the 9221 and 9221 Service Processor (SP). This is called 9221 Service Processor (SP) internal code.

Changes to Hardware Management Console internal code are made from a Hardware Management Console.

Changes to 9221 Service Processor (SP) internal code are made from the 9221 Service Processor (SP) itself using the standard 9221 service procedures. They cannot be made from the Hardware Management Console and are therefore not covered in this book.

One Hardware Management Console cannot be used to apply internal code changes to another Hardware Management Console, each Hardware Management Console has to apply its own changes. A single Hardware Management Console can retrieve changes for all the Hardware Management Consoles in the domain.

You should recommend that your customer uses Scheduled Operations to automatically make the changes. For more information on using Scheduled Operations, refer to 5.1.1, "Using Scheduled Operations to Make Changes." If your customer does not use Scheduled Operations to make the updates refer to 5.1.3, "Making Changes Manually" on page 169.

In addition to changes you may also have to install a new engineering change (EC) level which replaces all licensed internal code, or temporary fixes under the guidance of IBM Product Engineering. The location of the information about ECs and fixes can be found in the table in Chapter 5, "Licensed Internal Code Changes" on page 167.

5.1.1 Using Scheduled Operations to Make Changes

The customer can customize scheduled operations to periodically apply licensed internal code changes. This is the preferred method for applying changes because:

- The changes fix known problems, it is better to apply them promptly than wait for the problems to disrupt system operations.
- Changes can be scheduled for one CPC at a time, leaving the rest of the system to operate thus increasing system availability.

The sequence for applying licensed internal code changes using Scheduled Operations is:

1. Back up critical data
2. Accept changes that have already been activated
3. Retrieve the latest changes

5.1.2 Authorizing Internal Code Changes

The customer can use Authorize Internal Code Changes on the Hardware Management Console to enable or disable the ability to make licensed internal code changes. When it is set to Disable, no new licensed internal code changes are allowed on the Hardware Management Console. There are two ways internal code changes can be disabled:

- Manually selecting the console action of Authorize Internal Code Changes on the Hardware Management Console and selecting Disable. This is done if the customer detects problems with a new code level change or when no new changes are desirable.
- Automatically when problems are found in a new licensed internal code change. When this occurs, the system will be activated back to the previous licensed internal code change level.

If Authorize Internal Code Changes are disabled, they must be manually enabled before any new change levels can be applied to the system.

5.1.3 Making Changes Manually

Use the following information and procedures to update the licensed internal code when the customer chooses not to use Scheduled Operations to make the automatic updates.

The change licensed internal code functions are:

5.1.3.1 Retrieve Internal Code Changes

Loads changes on the Hardware Management Console fixed disk. The changes are retrieved from diskette, optical disk, or IBM Support System.

Note: If you have more than one Hardware Management Console and not all Hardware Management Consoles can connect to the IBM Support System, use the procedure in 5.2.6, “Retrieving Changes to Removable Media” on page 180 to copy the changes from one Hardware Management Console to a diskette or optical cartridge and move them to the other Hardware Management Consoles.

5.1.3.2 Install and Activate Changes that were Retrieved

Installs and activates the changes that were retrieved to the fixed disks for the Hardware Management Console.

Internal changes that are concurrent may be installed and activated without disrupting Hardware Management Console operations. Internal changes that are disruptive should be installed and activated at a time convenient to Hardware Management Console operations.

5.1.3.3 Activate Changes that were Installed

Allows you to test the changes that were installed before they are accepted and become a permanent part of internal code.

5.1.3.4 Accept All Installed Changes that were Activated

Makes changes which are installed and activated a permanent part of the licensed internal code. Once changes are accepted, they cannot be removed.

5.1.3.5 Select the Configuration Specific Changes

This selection is for licensed internal code changes that require special handling because they are intended only for specific machine configurations. An example is a system with a Request Price Quotation (RPQ). This selection is normally not available (greyed out).

The configuration specific changes are retrieved with the other licensed internal code changes. When a configuration specific change is retrieved, the Select the configuration specific changes selection becomes available. It allows you to activate or deactivate the configuration specific changes.

Note: Configuration specific Hardware Management Console changes are selected from Change Console Internal code (a Console Action).

5.1.3.6 Browse System and Internal Code Information

Allows you to select a licensed internal code change and display the engineering change (EC) number. The Display selection displays the date and time the change was retrieved, activated, or removed.

5.1.3.7 Remove and Activate Changes

Removes all changes that have not been accepted and activates the system using the previous level of internal code.

Note: Once changes are accepted, they cannot be removed.

5.1.3.8 Remove Changes that were Installed

Returns installed or activated changes to the retrieved state so they are not loaded during activation.

5.1.3.9 Delete All Retrieved Changes that were Not Installed

This selection allows you to delete changes that have been retrieved, but not installed. Use this selection only under the direction of IBM Product Engineering. It is used to delete retrieved changes which are found to contain errors.

5.1.3.10 Retrieve Changes to Removable Media

Use this selection if your system has more than one Hardware Management Console and not all Hardware Management Consoles can connect to the IBM Support System. You can retrieve changes from the IBM Support System then use this selection to copy the changes to a diskette or optical cartridge and take them to the other Hardware Management Consoles. For more information, refer to 5.2.6, "Retrieving Changes to Removable Media" on page 180.

Figure 21 on page 171 shows the panel for Hardware Management Console internal code. The top EC number is normally for the OS/2 portion of the Hardware Management Console internal code, the lower for the Hardware Management Console application internal code. Figure 22 on page 171 shows the details for each EC number.

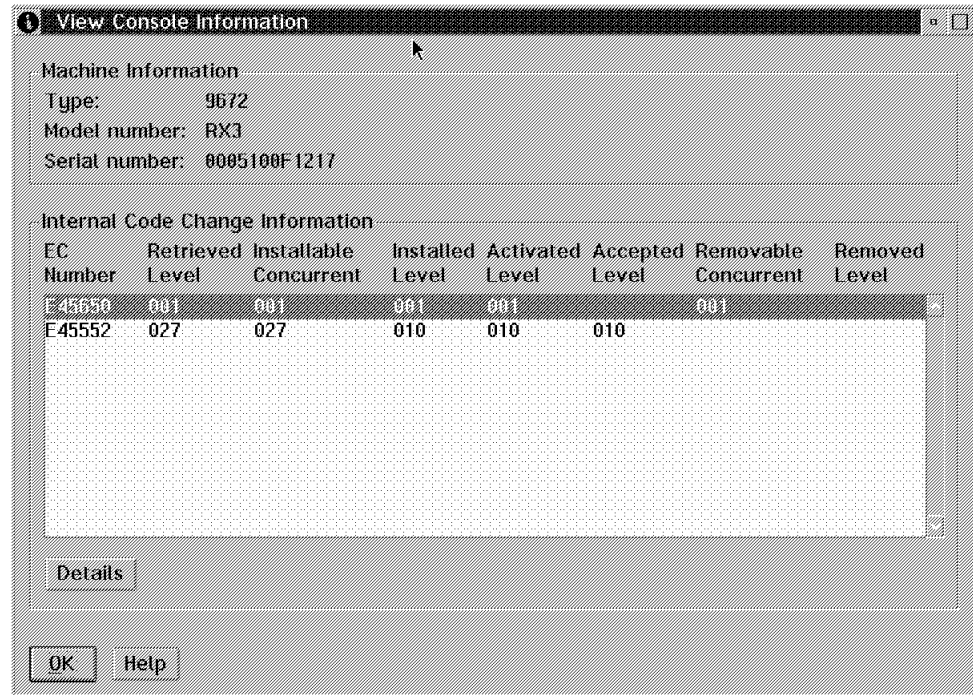


Figure 21. Hardware Management Console Console Information Panel

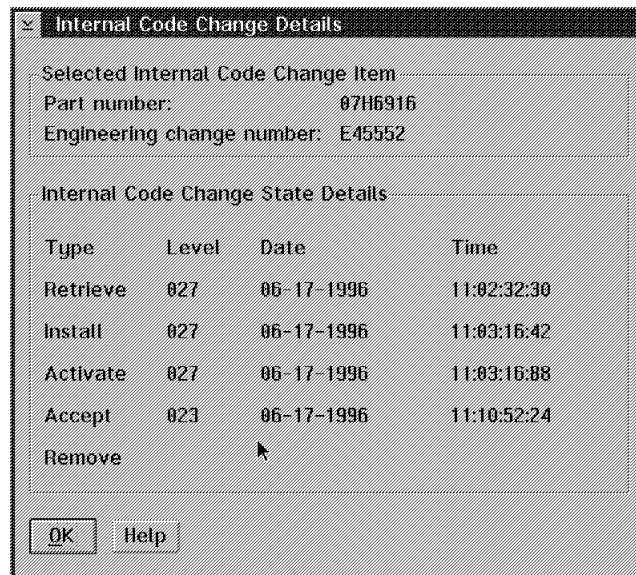


Figure 22. Hardware Management Console Internal Code Details

5.2 Procedures for Changes

The following pages describe how to do the Retrieve, Install, Activate, Remove, and Accept tasks for Hardware Management Console internal code changes.

5.2.1 Sequence of Change Tasks

1. Ensure the existing configuration information is saved for the Hardware Management Console. For information, refer to 4.27.3, “Saving Hardware Management Console Configuration” on page 157.
2. **Accept** any changes already activated and tested. (See 5.2.4, “Accepting Internal Code Changes” on page 177.)
3. **Retrieve** changes. (See 5.2.2, “Retrieving Internal Code Changes” on page 173.)
4. **Install and Activate** changes. (See 5.2.3, “Installing and Activating Internal Code Changes” on page 175.)

5.2.2 Retrieving Internal Code Changes

This procedure allows you to retrieve licensed internal code changes from diskette, optical disk, or the IBM Support System. The retrieve process is done from the Hardware Management Console.

Notes:

1. You will have to wait until all available changes are retrieved, before you can select the changes for additional actions.
2. If you have a system with more than one Hardware Management Console, you will have to do these steps on each Hardware Management Console.

If only one Hardware Management Console can connect to the IBM Support System, use the procedure in 5.2.6, "Retrieving Changes to Removable Media" on page 180 to retrieve the changes for the other Hardware Management Consoles.

1

Ensure the existing configuration information is saved for all Hardware Management Consoles.

Go to step 2.

For information, refer to 4.27.3, "Saving Hardware Management Console Configuration" on page 157.

2

Retrieving Hardware Management Console changes.

Ensure the Hardware Management Console is in Advanced Operator, System Programmer, or Service mode.

On the Hardware Management Console Workplace window:

- Open **Console Actions** from the **Views** area.
- Select **Change Console Internal Code** from the Console Actions Work Area.

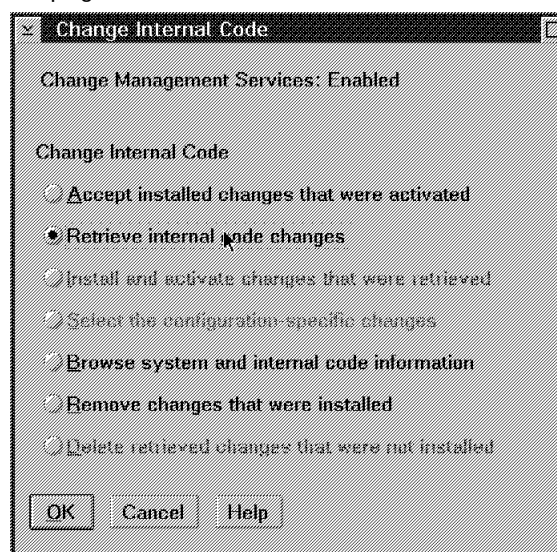
On the Change Internal Code window:

- Select **Retrieve Internal Code Changes**.

You should receive a picture which looks like that on the right-hand site.

Go to step 3.

For information on signing on the Hardware Management Console in service mode, refer to 3.2, "Using the Hardware Management Console" on page 29.



For information on using the Hardware Management Console, refer to *Hardware Management Console Guide*, GC38-0453.

3

On the Retrieve Internal Code Changes window:

- Select the media used to retrieve the changes.
- Select **OK**.

Follow any instructions for installing the selected media.

On the Select Internal Code Change window:

- Select **All changes**. (See **Note**.)
- Select **OK**.

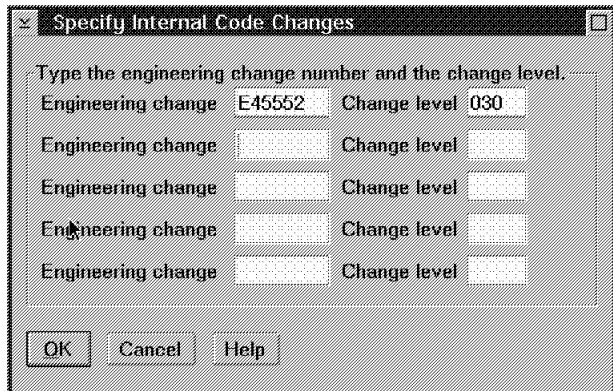
End of Hardware Management Console retrieve internal code changes.

You can receive the changes from the following sources:

- Optical Cartridge
- Diskette
- IBM Support System

If you have an SUL ROC always retrieve the changes from this ROC first. Then retrieve the changes from the IBM Support System to verify whether new changes are released after the build of the SUL ROC.

Note: If you select specific changes, the figure below will allow you to select the changes to be retrieved. The next example will retrieve MCL 30 for EC E45552 **and** all MCLs up to MCL 30 which were not retrieved before.



5.2.3 Installing and Activating Internal Code Changes

This procedure allows you to install and activate licensed internal code changes that are retrieved. You can install all changes or select a group to install.

Notes:

1. Always select Install and Activate unless you are instructed otherwise.
2. All Hardware Management Console internal code changes can be installed and activated concurrently.
3. Hardware Management Console internal code changes may be concurrent or disruptive to the Hardware Management Console operations.
4. Concurrent Hardware Management Console changes can be installed and activated without disrupting the customer's operating system.
5. For disruptive Hardware Management Console changes the customer is required to stop the Hardware Management Console operations.

1

Installing and activating Hardware Management Console changes.

Ensure the Hardware Management Console is in Advanced Operator, System Programmer, or Service mode.

On the Hardware Management Console Workplace window:

- Open **Console Actions** from the **Views** area.
- Select **Change Console Internal Code** from the Console Actions area.

Go to step 2.

For information on signing on the Hardware Management Console in Service mode, refer to 3.2, "Using the Hardware Management Console" on page 29.

For information on using the Hardware Management Console, refer to *Hardware Management Console Guide*, GC38-0453.

2

On the Change Internal Code window:

- Select **Install and activate changes that were retrieved** from the menu.
- Select **OK**.

Go to step 3.

3

On the Confirm the Action window:

- Select **Install and activate**.

Go to step 4.

Installation and activation of disruptive changes will require the customer to stop the Hardware Management Console operations.

4

During the install process the Change Internal Code Progress window displays.

If error messages display, call the next level of support.

When the install and activate is complete:

- Select **OK**.

End of Hardware Management Console install and activate task.

5.2.4 Accepting Internal Code Changes

This procedure allows you to accept licensed internal code changes which are installed and activated as a permanent part of the system's licensed internal code.

Note: Once a change is accepted, it cannot be removed. A new change must be retrieved, installed, activated, (and accepted) to replace it.

1

Accepting Hardware Management Console changes.

Ensure the Hardware Management Console is in Advanced Operator, System Programmer, or Service mode.

On the Hardware Management Console Workplace window:

- Open **Console Actions** from the **Views** area.
- Select **Change Console Internal Code** from the Console Actions area.

Go to step 2.

For information on signing on the Hardware Management Console in Service mode, refer to 3.2, "Using the Hardware Management Console" on page 29.

For information on using the Hardware Management Console, refer to *Hardware Management Console Guide*, GC38-0453.

2

On the Change Internal Code window:

- Select **Accept all changes that were activated** from the menu.
- Select **OK**.

Go to step 3.

Note: If you are making changes to Hardware Management Console internal code, you can select specific changes on this step. You will be prompted to enter the changes you want.

3

On the Confirm the Action window:

- Select **Accept**.

Go to step 4.

4

During the accept process the Change Internal Code Progress window displays.

When the accept is complete:

- Select **OK**.

End of accept task.

If the window displays an error when a change is accepted, click on the error message to display details of the error.

5.2.5 Removing Internal Code Changes

This procedure allows you to remove internal code changes which were previously installed. This allows you to return the system internal code to its previous state.

Notes:

1. Use this procedure only under the direction of IBM Support.
2. Once a change is accepted, it cannot be removed. A new change must be retrieved, installed, activated, (and accepted) to replace it.

1

Removing Hardware Management Console changes.

Ensure the Hardware Management Console is in Advanced Operator, System Programmer, or Service mode.

On the Hardware Management Console Workplace window:

- Open **Console Actions** from the **Views** area.
- Select **Change Console Internal Code** from the Console Actions area.

Go to step 2.

For information on signing on the Hardware Management Console in Service mode, refer to 3.2, "Using the Hardware Management Console" on page 29.

For information on using the Hardware Management Console, refer to *Hardware Management Console Guide*, GC38-0453.

2

On the Change Internal Code window:

- Select **Remove changes that were installed** from the menu.
- Select **OK**.

Go to step 3.

3

On the Confirm the Action window:

- Select **Remove and activate**.

Go to step 4.

4

On the Change Internal Code window:

- Select **Remove and activate changes** from the menu.
- Select **OK**.

Go to step 5.

5

On the Request Selection window:

- Select **Remove all changes even if they are disruptive** if the customer allows you to disrupt the operating system. **Warning:** If any of the changes to be removed are marked as **Disruptive**, make sure the customer has stopped Hardware Management Console operations before continuing.
- Select **Remove all concurrent changes only** if the customer does not allow you to disrupt the Hardware Management Console
- Select **Remove and activate**.

Note: Disruptive changes, when activated, stop all Hardware Management Console operations.

End of Removing Internal Code Changes

5.2.6 Retrieving Changes to Removable Media

This procedure allows you to retrieve internal code changes from the IBM Support System, load them on either a diskette or optical cartridge, and take them to another Hardware Management Console. Use this when the second Hardware Management Console cannot connect with the IBM Support System. This allows you to update the internal code on the Hardware Management Console.

1

Ensure the Hardware Management Console that is retrieving the changes is in Service, System Programmer, or Advanced Operator mode.

The Hardware Management Console retrieving the changes has to be able to connect to the IBM Support System.

On the Hardware Management Console Workplace window:

- Open **Console Actions** from the **Views** area.
- Select **Change Console Internal Code** from Console Actions.

Go to step 2.

2

On the Change Internal Code window:

- Select **Retrieve internal code changes**.
- Select **OK**.

Go to step 3.

3

On the Retrieve Internal Code window:

- Select **Retrieve changes to removable media**.
- Select **OK**.

Go to step 4.

4

On the Retrieve Changes to Media window:

The media choices are diskette or optical cartridge.

- Select the media you want to copy the changes to.
- Select **OK**.

Go to step 5.

5

On the Specify Internal Code Changes window:

- Type the EC Change and Change Level of the changes you want to retrieve into the fields provided.

Note: If you are unsure which changes you want to retrieve, type **ALL** in the Engineering Change field or call the next level of support.

- Select **OK**.

Go to step 6.

Maximum time required to retrieve all changes is five hours.

6

Follow the instructions on the windows to install the removable media. When complete, select **OK**.

Use the diskette or optical cartridge to install the internal code changes on the rest of the Hardware Management Consoles. For instructions, refer to 5.2.3, "Installing and Activating Internal Code Changes" on page 175.

End of procedure

The Hardware Management Console connects to the IBM Support System and retrieves the changes to the media you selected.

5.3 Internal Code Fixes for a Hardware Management Console

Licensed internal code fixes are used to temporarily fix Hardware Management Console internal code problems when no formal changes are available. *Use this information to install a fix only when you are directed to do so by IBM Product Engineering.*

To work with Hardware Management Console internal code fixes, select **Analyze Console Internal Code** from the **Console Actions** area. After selecting internal code fixes the first window displayed is Manage Internal Code Fixes. The following selections are available on the menu bar: **File**, **Options**, and **View**.

The **File** pull-down items are:

5.3.1.1 New

Use this pull-down selection to enter the information for a new temporary internal code fix. After entering the file name, file extension, author's name, and a description of the fix, the Edit Internal Code Fix window displays. Use this window to enter the code modules for the fix as supplied by Product Engineering.

5.3.1.2 Open

Use this pull-down selection to change the information for an existing temporary internal code fix. If necessary, change the author's name and fix description. Then request **Edit data** to edit the code module for the fix.

5.3.1.3 Save

Use this pull-down selection to make a copy of a selected internal code fix and store it by another name or in a different directory.

5.3.1.4 Move

Use this pull-down selection to copy a selected internal code fix to a different fixed disk or directory location.

5.3.1.5 Delete

Use this pull-down selection to remove a selected temporary internal code fix from the list of fixes available for the system.

The **Options** pull-down items are:

5.3.1.6 Activate Internal Code Fix

Use this pull-down selection to replace the system's existing internal code with a selected internal code fix when the system is activated. This changes the status on the Manage Internal Code Fixes window to **PEND** until the system is activated. After activation, the status of the selected internal code fix becomes **ACT** if no syntax errors are found or **ERR** if errors are found.

5.3.1.7 Deactivate Internal Code Fix

Use this pull-down selection when a previously activated internal code fix is **not** to be used as a part of the system's internal code the next time the system is activated. This changes the status on the Manage Internal Code Fixes window to **PEND** until the system is activated again. After activation, the status of the selected internal code fix becomes **DEACT**. This selection does not remove the fix from the list.

The **View** pull-down items are:

5.3.1.8 Internal Code Fix Information

This selection provides information about the selected fix including date, status, data, and cyclic redundancy character value.

5.3.1.9 Internal Code Fix Modules

This selection provides a listing of the fix modules associated with the selected internal code fix.

5.3.1.10 Accepted Internal Code Fixes

This selection provides a list of the licensed internal code fixes that have been accepted for the system.

5.3.1.11 Another Directory

This selection allows you to enter the name of another directory where internal code fixes are stored.

5.3.2 Installing Internal Code Fixes (Hardware Management Console)

The following is the procedure used for retrieving a temporary internal code fix from a diskette and installing it on a Hardware Management Console.

1

Ensure the Hardware Management Console is in Service mode.

On the Hardware Management Console Workplace window:

- Open **Console Actions** from the **Views** area.
- Select **Analyze Console Internal Code** from the Tasks Work Area.

Go to step 2.

For information on signing on the Hardware Management Console in service mode, refer to 3.2, "Using the Hardware Management Console" on page 29.

For information on using the Hardware Management Console, refer to *Hardware Management Console Guide*, GC38-0453.

2

If the No Internal Code Fixes window displays, select **OK**.

On the Manage Internal Code Fixes window:

- Select **View** from the menu bar.
- Select **Another directory** from the pull-down.

3

On the Another Directory window:

- Type **A:*.*** in the Search path field.
- Select **OK**.

This displays all files on the diskette.

4

On the Manage Internal Code Fixes window:

- Select the temporary internal code fix and associated files from the menu.
 - Select **File** from the menu bar.
 - Select **Move** from the pull-down.
-

5

On the Move Internal Code Fixes window:

- Type **C:\MCF** in the Path specification field.
 - Select **OK**.
-

This selects the MCF directory on the Hardware Management Console fixed disk.

6

On the Manage Internal Code Fixes window:

- Select the temporary internal code fix and associated files from the menu.
 - Select **View** from the menu bar.
 - Select **Another directory** from the pull-down.
-

7

On the Another Directory window:

- Leave the Search path field blank.
 - Select **OK**.
-

This selects the default directory.

8

On the Manage Internal Code Fixes window:

- Select the temporary internal code fix from the menu.
 - Select **Options** from the menu bar.
 - Select **Activate internal code fix** from the pull-down.
-

9

Note: The customer must stop running the Hardware Management Console before continuing.

Press and hold the **Alt** and **Ctrl** keys.
Then, press **Delete**. (**Alt+Ctrl+Delete**)

This restarts the Hardware Management Console with the new fix.

End of procedure.

5.4 Upgrading Internal Code Level for HMC

Use this section when you receive an optical cartridge to change the licensed internal code for a Hardware Management Console to a new level.

You will need:

- MC Restore diskette 1 of 2 (HWMCA - Restore 1)
- MC Restore diskette 2 of 2 (HWMCA - Restore 2)
- One of the following:
 - Hardware Management Console Base Code cartridge (HWMCA-ROC) with new level of internal code
 - Hardware Management Console Base Code cartridge (HWMCA-ROC2) with new level of internal code
 - Hardware Management Console Base Code cartridge (HWMCA-ROC3) with new level of internal code

Note: This procedure is for use with base code cartridges (ROCs) for a particular licensed internal code driver only. If the ROC you are using has changes to upgrade a driver level, follow the instructions shipped with the ROC.

With a driver only the ROC label will say:

DRIVER xx

With changes in addition to a driver, the ROC label will say:

DRIVER xx AROC with MCL\$s to MCLxxxx

1

At the Hardware Management Console you are changing:

- Ensure power is on.
 - Place the MC Restore diskette 1 of 2 in diskette drive A.
 - Press and hold **Ctrl** and **Alt**; then press **Delete** (**Alt+Ctrl+Delete**). Release them all.
-

2

Follow the instructions on the windows to insert the following cartridges:

- Hardware Management Console Base Code
 - HWMCA-ROC, HWMCA-ROC2, or HWMCA-ROC3,
- Hardware Management Console Backup (BACKUP-CART)

When the procedure asks for the SE-roc, remove the cartridge and diskette from the drives.

To restart the Hardware Management Console press and hold **Ctrl** and **Alt**; then press **Delete** (**Alt+Ctrl+Delete**). Release them all.

Go to step 3.

3

The update of the licensed internal code provides OS/2 a default setting of United States for the country and keyboard. If you require different settings, do the following:

- Minimize all windows until only the OS/2 Desktop is displayed.
- Open (double click on) the **OS/2 System** icon.
- Open **System Setup** from the OS/2 System - Icon View window.
- Open **Selective Install** from the System Setup - Icon View window.
- On the System Configuration window:
 - Select the **Country** icon.
 - Select the correct country from the menu.
 - Select OK.
 - Select the **Keyboard** icon.
 - Select the correct keyboard from the menu.
 - Select OK.
- Install the HWMCA-Feature-ROC in the optical drive and follow the instructions on the display to copy the feature information.
- Shut down the Hardware Management Console. For information, refer to 3.3, "Stopping the Hardware Management Console" on page 33.
- Power-on reset the Hardware Management Console (**Ctrl + Esc + Delete**).

Go to step 4.

HWMCA-ROC is used for PS/2 model 9595 MCA XGA

HWMCA-ROC2 is used for PS/2 model 9577 MCA SVGA

HWMCA-ROC3 is used for PC model 6887 ISA SVGA

Select F1 from the menu. This selection is used when a **new** level of internal code is to be loaded on the system.

Note: The F8 selection reloads the **old** base code from the base code cartridge and the system configuration information from the backup cartridge.

4

Note: Check to see if you have **all** of the following:

- Licensed internal code level you are installing is EC12933 *or higher*
- Hardware Management Console uses an ISA bus based PC model 6885
- Hardware Management Console uses a 952x display

If you have all the items in the list, go to 4.27.5, “Hardware Management Console Display Settings” on page 160. Otherwise, the procedure is complete.

End of procedure

Note: The procedure in 4.27.5, “Hardware Management Console Display Settings” on page 160 customizes the display used for the Hardware Management Console. It is *not* necessary if any of the following are true:

- the display is a 6554 (P70) or 6555 (P200)
- the PC is a 95xx PS/2 MCA bus

Appendix A. Parts List for 9577i Server

As used with RPQ S02368

FRU P/N	Description	S02366 SP	S02368 HMC
68G2709	Bus Adapter	Y	Y
34F2717	Cable ITBU	Y	N
71G2558	Cable, SCSI, internal	Y	Y
96F7756	Cable, planar to diskette	Y	Y
93G8781	Cable, diskette	Y	Y
39F7597	Card, Emulator, 327x	Y	Y
96F9156	Card, Multi Protocol Adapter	Y	Y
71G3576	Card, SCSI, Internal/External	Y	Y
92G7695	Card, Token-Ring, 16/4 auto, MCA	N	Y
74F9415	Card, Token-Ring, 16/4, MCA	Y	N
64F4148	Diskette Drive 2.88MB	Y	N
71G6551	Hard Disk SCSI 340MB	Y	N
92F0406	Hard Disk SCSI 540MB	N	Y
05H2794	Optical Drive R/W 230MB	N	Y
05H2762	Optical Mounting Kit OOKITAY	N	Y
66G7444	Optical Lens Cleaner	N	Y
96G1306	Planar DX4 33/99 Mhz	Y	Y
61G3411	Power Supply	Y	Y
92F0098	SIMM ECC 8MB 70ns	Y (2)	Y (3)
96F9100	SIMM ECC 16MB 70ns	N	Y (3)
06H3652	256KB L2 Cache	Y (1)	Y (1)
06H3654	128KB L2 Cache	Y (1)	Y (1)
82G1794	1MB Video Memory Expansion	Y	Y
87F9787	Tape Drive (120) ITBU	Y	N
19G3199	9577i Reference Diskette (cannot be ordered)	Y	Y
19G3200	9577i Diagnostic Diskette (cannot be ordered)	Y	Y
Note: 1. Either a 128KB or a 256KB L2 Cache is installed 2. SP has 24MB storage (3 * 8MB) 3. HMC has 32MB storage (1 * 16MB + 2 * 8MB or 4 * 8MB)			

Table 17. FRU Part Numbers for 9577i Server

Appendix B. Special Notices

This publication is intended to help System Administration personnel and service personnel to use the Hardware Management Console Application with the ES/9000 9221-211 based processors.

It can also be used as a guide on the HMC functionality in general and explains the concepts of the HMC.

The information in this publication is not intended as the specification of any programming interfaces that are provided by Licensed internal code provided with the HMC. See the PUBLICATIONS section of the IBM Programming Announcement for 9672 line of processors for more information about what publications are considered to be product documentation.

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Appendix C. Related Publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this redbook.

C.1 International Technical Support Organization Publications

For information on ordering ITSO publications see "How To Get ITSO Redbooks" on page 195.

C.2 Redbooks on CD-ROMs

Redbooks are also available on CD-ROMs. **Order a subscription** and receive updates 2-4 times a year at significant savings.

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Application Development Redbooks Collection	SBOF-7290	SK2T-8037
Personal Systems Redbooks Collection	SBOF-7250	SK2T-8042

C.3 Other Publications

These publications are also relevant as further information sources.

- *Hardware Management Console Application Programming Interfaces*, SC28-8141
- *Hardware Management Console Guide*, GC38-0453

How To Get ITSO Redbooks

This section explains how both customers and IBM employees can find out about ITSO redbooks, CD-ROMs, workshops, and residencies. A form for ordering books and CD-ROMs is also provided.

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List of Abbreviations

AC	Alternating current	IRQ	Interrupt request
API	Application Program Interface	ISA	Industry Standard Architecture
APM	Advanced power management	ITBU	Internal tape backup unit
ASCII	American National Standard Code for Information Interchange	ITSO	International Technical Support Organization
BIOS	Basic input/output system	LAN	Local Area Network
CD	Compact disk	LAPM	Link access procedure for modems
CD-ROM	Compact disk - Read only memory	LED	Light emitting diode
CMOS	Complementary Metal Oxide Semiconductor	LIC	Licensed internal code
CPC	Computer processor complex	LPAR	Logically PARTitioned mode
DASD	Direct Access Storage Device	L2	Level two cache
DCAF	Distributed console access facility	MAU	Medium attachment unit
DDC	Direct Digital Control	MC	Machine control
DMA	Direct memory access	MCA	Machine check adapter
DOS	Disk Operating System	MCF	Microcode fix
DSR	Dynamic shift register	MODEM	MOdulator DEModulator
DTE	Data transmission exchange	MSAU	Multi-station access unit
DTR	Distribution tape reel	OS/2	Operating System/2
EC	Engineering change	P/N	Part number
ECC	Error correction circuitry	PA	Problem analysis
ESCON	Enterprise Systems CONnection	PC	Personal Computer
FRU	Field replaceable unit	PCI	PC Interface
HCD	Hardware configuration definition	POST	Power-on self-test
HDLC	High-level Data Link Control	PR/SM	Processor resource/systems manager
HMC	Hardware Management Console	PS/PC	Personal System/Personal Computer
I/O	Input/output	PS/2	IBM Personal System/2
IBM	International Business Machines	PSW	Program Status Word
ICL	Internal code level	R/W	Read/write
ICON	A graphic symbol on a computer menu or other display	RAM	Random access memory
IDE	Integrated drive electronics	RI	Ring In
IML	Initial microprogram load	RO	Ring Out
IOCDS	I/O configuration data set	ROC	Rewriteable optical cartridge
IPL	Initial program load	ROM	Read only memory
		RPL	Remote program loader
		S/370	IBM System/370
		S/390	IBM System/390
		SCSI	Small Computer System Interface

SCSI-2	Small Computer System Interface - 2	TCP/IP	Transmission Control Protocol/Internet Protocol
SDLC	Synchronous Data Link Control	VGA	Virtual graphics adapter
SNMP	Simple network management protocol	VM	Virtual Machine
SUL	System update level	VM/ESA	Virtual Machine/Enterprise Systems Architecture
SVGA	Super video graphics array/adaptor	WAC	Wide Area Connector
S3	SVGA chipset	WARP	Workstation Asset Reduction Program
		XGA	eXtended Graphics Adapter
		XGA-2	eXtended Graphics Array

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Runtime values:

Document fileid	SG244832 SCRIPT
Document type	USERDOC
Document style	REDBOOK
Profile	EDFPRF30
Service Level	0029
SCRIPT/VS Release	4.0.0
Date	96.11.26
Time	04:46:53
Device	3820A
Number of Passes	4
Index	YES
SYSVAR D	YES
SYSVAR G	INLINE
SYSVAR S	OFFSET
SYSVAR X	YES

Formatting values used:

Annotation	NO
Cross reference listing	YES
Cross reference head prefix only	NO
Dialog	LABEL
Duplex	YES
DVCF conditions file	(none)
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DVCF value 8	(none)
DVCF value 9	(none)
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Figure list on new page	YES
Figure/table number separation	YES
Folio-by-chapter	NO
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Head 1 body text	Chapter
Head 1 appendix text	Appendix
Hyphenation	NO
Justification	NO
Language	ENGL
Layout	OFF
Leader dots	YES
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Partial TOC (new page after)	INLINE
Print example id's	NO
Print cross reference page numbers	YES
Process value	(none)
Punctuation move characters	,
Read cross-reference file	(none)
Running heading/footing rule	NONE
Show index entries	NO
Table of Contents (maximum level)	3
Table list on new page	YES
Title page (draft) alignment	RIGHT
Write cross-reference file	(none)

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